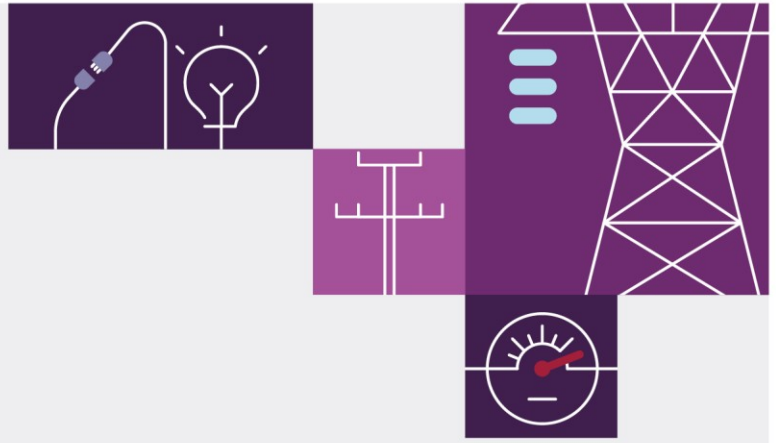


Integrating Energy Storage Systems (IESS)

March 2024

IESS Bidirectional unit transition and cutover plan





Important notice

Purpose

To support the IESS Rule Change, this document:

- Provides information to support participants in the process to cutover from BESS to BDU
- Details the prerequisites, forward notice and steps required to cutover.

This publication has been prepared by AEMO using information available at 13 March 2024.

Disclaimer

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Version control

| Version | Release date | Changes |
|---------|--------------|---|
| 0.1 | 1/12/2023 | Draft for Industry Feedback |
| 1.0 | 31/1/2024 | Includes changes made in response to stakeholder feedback |
| 1.1 | 13/03/2024 | Updated with additional detail |



Executive summary

The Australian Energy Market Operator (AEMO) and National Electricity Market (NEM) participants are currently implementing the Integrating Energy Storage Systems (IESS) and the implementation program has entered its development phase.

The National Electricity Rules (NER) changes for IESS have amended or introduced new regulatory obligations on certain NEM participants and AEMO. They require significant updates or changes to market procedures and market and participants' systems at various times. AEMO has a key coordination role, through collaboration with its industry working groups, to ready industry and itself for the various rule commencement and IT system "go-live" dates.

This IESS Bidirectional Unit Transition and Cutover plan outlines the expected responsibilities, activities, dependencies, and timeframes for AEMO and Participants to successfully transition all grid-scale batteries from the existing 2-DUID arrangement to a single BDU DUID. It is one of a series of documents that support the IESS rule change.

Contents

| | |
|---|----|
| Executive summary | 3 |
| 1 Introduction | 6 |
| 1.1 AEMO's IESS implementation program | 6 |
| 1.2 Purpose | 7 |
| 1.2.1 Reference documents | 8 |
| 1.3 Scope | 8 |
| 1.3.1 In Scope | 8 |
| 1.3.2 Out of Scope | 8 |
| 1.3.3 Where scope is uncertain | 9 |
| 2 Bidirectional Unit Transition | 9 |
| 2.1 Transitional Arrangements | 9 |
| 2.2 Transitional responsibilities | 10 |
| 2.3 Risk management | 10 |
| 2.4 Bidirectional Unit Transition Schedule | 12 |
| 3 Bidirectional Unit (BDU) Cutover | 13 |
| 3.1 Prerequisites for cutover | 14 |
| 3.1.1 SCADA | 14 |
| 3.1.2 Conformance monitoring | 14 |
| 3.1.3 Metering | 15 |
| 3.2 Bidirectional Unit (BDU) cutover activities | 15 |
| 3.3 National Meter Identifier (NMI) Cutover | 19 |
| 3.3.1 NMI cutover activities | 20 |
| 3.4 Contingency arrangements | 24 |
| 3.4.1 'No Go' Declared | 24 |
| 3.4.2 Rollback | 24 |
| 4 Development and testing with AEMO's systems | 26 |
| A1. Indicative BDU transition timetable | 28 |
| A2. IESS indicative bidirectional unit cutover timeline | 29 |
| A3. IESS indicative NMI cutover timeline | 30 |
| Glossary | 31 |



Tables

| | |
|---|----|
| Table 1 Changes introduced by the IESS rule. | 6 |
| Table 2 Reference Documents | 8 |
| Table 3 Transitional arrangements | 9 |
| Table 4 AEMO and Participant responsibilities in carrying out the transition. | 10 |
| Table 5 Risk Management | 10 |
| Table 6 Timeframe to complete process of developing BDU transition schedule. | 12 |

Figures

| | |
|---|----|
| Figure 1 Process for developing BDU transition schedule. | 12 |
| Figure 2 Planned Availability of Environments | 27 |
| Figure 3 Indicative BDU transition timetable, as at November 2023 | 28 |
| Figure 4 IESS indicative bidirectional unit cutover timeline | 29 |
| Figure 5 IESS Indicative NMI cutover timeline | 30 |

1 Introduction

This chapter provides background information on AEMO’s Integrating Energy Storage Systems (IESS) implementation program and sets out the purpose of this IESS Bidirectional Unit Transition and Cutover Plan.

This document pertains to the transition period and cutover process for grid-scale Battery Energy Storage Systems (BESS) to move from the existing 2-DUID arrangement to a single BDU DUID.

Transition refers to the period available to transition BESSs from the existing 2-DUID arrangement to a single BDU DUID from 03 June 2024 to 03 March 2025.

Cutover refers to the process to cutover each BESS from an existing 2-DUID arrangement to a single BDU DUID, with detailed steps.

1.1 AEMO’s IESS implementation program

On 2 December 2021 the Australian Energy Market Commission (AEMC) made a Final Determination on the Integrating Energy Storage Systems (IESS) rule. The change seeks to better integrate storage and aggregate systems into the National Electricity Market (NEM). The IESS rule comprises four distinct high-level changes, described in Table 1.

Table 1 Changes introduced by the IESS rule.

| Implementation date | Change | Description |
|--|---|--|
| Fri 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). |
| Wed 09 Aug 2023 | Aggregated dispatch conformance (ADC) | Complete. <ul style="list-style-type: none"> 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. |
| Sun 02 Jun 2024 | IESS retail and settlement changes | Significant changes to the calculation method to be used for Non-Energy Cost Recovery (NECR): <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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. |
| Sun 02 Jun 2024 (IRP) Mon 03 Jun 2024 (BDU) | Registration, bidding, and dispatch changes | <ul style="list-style-type: none"> Introduction of Integrated Resource Provider (IRP) participant type Bidirectional unit (BDU) bidding and dispatch, with impacts for BDU participants and bidding system vendors/developers. |

The IESS program covers the procedural, IT system and market readiness arrangements needed to implement the IESS rule including:

- Procedures – defines and implements the required changes to market procedures.
- Systems – designs, develops, tests, and implements changes to AEMO’s market systems.
- Readiness – coordinates, assists, and prepares AEMO and participants for the transition to IESS.

1.2 Purpose

AEMO’s IESS implementation program has entered the development phase of the project. This document is specific to the component of market readiness for the IESS June 2024 release that introduces the Bidirectional Unit (BDU).

The Integrating Energy Storage Systems (IESS) rule changes how batteries are to be registered, connected, and managed in AEMO systems:

1. A new Integrated Resource Provider (IRP) participant category replaces the current requirement to register separately as both a Market Customer and Market Generator when connecting a battery.
2. A single BDU DUID is to be used in the bidding and dispatch of both the battery charging and discharge, which replaces the current requirement for separate DUIDs for each energy direction from the battery.
3. A single NMI is to be used in the energy settlement, which replaces the current dual NMI configuration that sees the generation and load recorded against different NMIs and separated in the current settlement process.

This IESS Bidirectional Unit Transition and Cutover Plan relates to the transition of the current 2-DUID arrangement to the single (BDU) DUID arrangement and covers items 2. and 3. of the above and is aimed at introducing more certainty for participants’ implementation planning. A separate document, the IESS IRP Transition Plan, will address item 1.

This plan outlines the expected responsibilities, activities, dependencies, and timeframes for AEMO and Participants to successfully transition all grid-scale batteries from a 2-DUID arrangement to a single BDU DUID. It is one of a series of documents that support the IESS rule change.



1.2.1 Reference documents

The following IESS related documents or web pages are relevant to the IESS Bidirectional Unit Transition and Cutover Plan.

Table 2 Reference Documents

| DOCUMENT | DESCRIPTION |
|---|--|
| IESS Readiness approach | Outlines the approach to ensure Industry readiness for the IESS June 2024 release. |
| IESS BDU Readiness Focus Group | Focus group materials cover changes, scope, and transition considerations for transitioning from a 2-DUID arrangement to a single BDU DUID. |
| IESS Industry test and market trial strategy | Industry reviewed Industry Test and Market Trial strategy to support IESS June 2024 release. |
| IESS Industry testing and market trial plan | The IESS industry testing and market trial plan sets out the approach to developing the plan and defines how and when the IESS industry testing and market trial will be executed. |
| IESS NMI classification code transition plan | The NCC transition plan sets out the activities, dependencies, and timeframes for AEMO to transition the existing distribution-connected generators (and generation side of distribution-connected storage) to the DGENRATR registration category. |
| IESS Integrated resource provider transition plan | The plan for transitioning from existing participant categories to the new IRP category. |
| IESS participant toolbox | A central location for Participants to access useful information around the IESS June 2024 release. |

1.3 Scope

The IESS Bidirectional Unit Transition and Cutover Plan focuses on the process to transition from the 2-DUID arrangement to a single DUID.

1.3.1 In Scope

Activities necessary for participants and AEMO to successfully implement BDU bidding and dispatch in alignment with the IESS Rule, including the:

- Approach to establishing the BDU transition timetable
- BDU cutover process and timeline.

1.3.2 Out of Scope

- ‘Business as usual’ bidding and dispatch activities
- Go-live planning for IESS data model and bidding format changes (separate deployment plan for these system changes)
- IRP registration activities for BESS, pumped hydro and SGAs. A separate transition plan (the IESS IRP Transition Plan) will be published for these IRP registration activities
- IESS settlement (NECR) changes.



1.3.3 Where scope is uncertain

AEMO and participants (via the Implementation Forum or the BDU Readiness Focus Group) will assess the issue and recommend next steps for its resolution. [\[66\]](#)

2 Bidirectional Unit Transition

2.1 Transitional Arrangements

AEMO has developed a transition approach that provides participants with some flexibility of when their BESS can transition to the new single DUID BDU arrangement.

The transition period covers a 9-month period between Mon 03 Jun 2024 and Mon 03 Mar 2025. Cutover of all grid-scale BESS to the single BDU DUID model will take place throughout this period, such that the transition to BDU bidding and dispatch is manageable and as efficient as possible for both participants and AEMO.

Transitional arrangements are summarised in the below table.

Table 3 Transitional arrangements

| PARTICIPANT TYPE | TRANSITIONAL ARRANGEMENT |
|--|--|
| IRS participants that commence operations from Mon 03 Jun 2024 | Expected to begin operations as a single BDU DUID, unless exceptional circumstances apply. |
| Existing IRS Participant* | Must cutover to the single BDU DUID arrangement between Mon 03 Jun 2024 and Mon 03 Mar 2025. |
| New IRS Participant* | Must cutover to the single BDU DUID arrangement between Mon 03 Jun 2024 and Mon 03 Mar 2025. |

* As defined in NER CI. 11.145.1. Note the arrangements for transitioning to the Integrated Resource Provider Participant category differ to that for BDU cutover and are provided in AEMO’s IESS IRP Transition Plan.

Transitional arrangements have been developed to accommodate participants who have bidding systems developed in-house or rely on a third-party bidding system vendor to provide bidding system capability for their battery. AEMO will take into consideration bidding system vendor dependencies with regard to cutover timing.

Participants will be provided with implementation flexibility where feasible, and where cutover risks are minimised.

2.2 Transitional responsibilities

Participants and AEMO hold responsibilities to support the success of the transition. Key responsibilities are outlined in the table.

Table 4 AEMO and Participant responsibilities in carrying out the transition.

| Responsibility | AEMO | Participant |
|--|------|-------------|
| Continued fulfilment of own regulatory and compliance obligations during transition and system cutover periods. | ✓ | ✓ |
| Participants and AEMO are each responsible for their own transition and go-live planning. | ✓ | ✓ |
| Use of the IESS Bidirectional Unit Transition and Cutover Plan as the basis of individual implementation plans that will factor in the key activities and dates. | | ✓ |
| Communication of any issues with meeting the BDU transition and cutover activities and responsibilities as soon as possible. | ✓ | ✓ |

2.3 Risk management

In developing the IESS Bidirectional Unit Transition and Cutover Plan, AEMO seeks to minimise any risks associated with transitioning to the BDU model. To appropriately manage these risks, AEMO is implementing the below mitigations in its cutover planning.

Table 5 Risk Management

| RISK AREA | RISK DESCRIPTION | MITIGATIONS |
|---------------------------------|---|---|
| Impact on NEM Operations | BDU Cutover activities either directly impact NEM operations or distract AEMO operational staff from attending to real-time operational issues. | <ul style="list-style-type: none"> Design cutover activities to make use of existing market scheduling process to reduce cutover risks before arrival at cutover dispatch period (e.g., risk of overlap in 2-DUID and 1-DUID dispatch). Include contingency arrangements in AEMO’s IESS Bidirectional Unit Transition and Cutover Plan, should NEM Operational matters require a short-notice deferral. Consider the aggregate BESS capacity when determining which BESS are scheduled to cut over within the same day or week, to mitigate risk of scheduling issues. |
| Operational capacity | Volume of cutover activities exceeds AEMO/vendors/participants’ capacity to manage them. | <ul style="list-style-type: none"> Ensure a sufficient spread of cutover dates for all existing BESS (on the current 2-DUID arrangement) to move to a single BDU DUID, such that risk of impact to the NEM is reduced. Where practicable, schedule no more than 3/4 cutovers in each week. Where possible to limit the number of participants involved in cutover activities a given week to 1. Where possible limit the number of regions that contain a BESS being cutover on a given day to 1. |

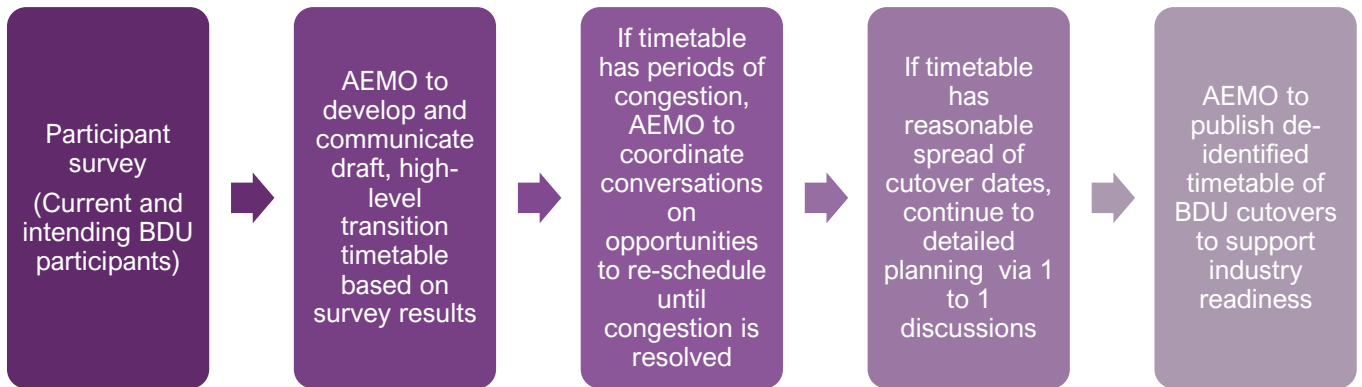
| RISK AREA | RISK DESCRIPTION | MITIGATIONS |
|------------------------------------|--|---|
| Preparedness | AEMO/Participant inadequately prepared to execute cutover activities. | <ul style="list-style-type: none"> Plan cutover dates in advance between all parties to optimise likelihood of all parties being adequately prepared to execute cutover activities. |
| Staff/Resource availability | Lack of availability of resources prevents/reduces ability to carry out pre and post cutover activities. | <ul style="list-style-type: none"> Select mid-week business days: Tuesdays, Wednesdays and Thursdays as preferred transition days. This allows for pre and post cutover activities to be done during business hours. Reduced cutover volumes to be scheduled on weeks with public holidays. Avoid scheduling of cutovers during typical December/January office shutdown periods. Actual cutover time will be 1300hrs market time (AEST), unless exceptional circumstances require otherwise. |
| Cutover delays | Planned cutovers are delayed due to unforeseen circumstances. | <ul style="list-style-type: none"> Cutover dates to be scheduled prior to February 2025. 1st February to 3rd March 2025 to be set aside for contingency transitions. |
| Unforeseen Circumstances | Due to circumstances unable to be planned for, a cutover cannot go ahead | <ul style="list-style-type: none"> Where an issue occurs that results in a decision to cease progressing a 2-DUID to single BDU DUID transition, a rollback may be invoked. |

AEMO may identify additional risks and associated mitigations to apply when finalising the IESS Bidirectional Unit Transition and Cutover Plan, as required.

2.4 Bidirectional Unit Transition Schedule

The BDU transition schedule is being developed based on the below process flow.

Figure 1 Process for developing BDU transition schedule.



Timeframes to complete each step of the process are provided in the table.

Table 6 Timeframe to complete process of developing BDU transition schedule.

| PROCESS ITEM | TIMEFRAME | STATUS (AS AT 31 JAN 2024) |
|---|-------------------------------|---|
| Participant survey of current affected participants* | 12 October to 26 October 2023 | Completed |
| AEMO to develop and communicate draft, high-level transition timetable based on survey results | November 2023 | Completed – refer Figure 3 |
| If timetable has periods of congestion, AEMO to coordinate conversations on opportunities to re-schedule until congestion is resolved | December 2023 – January 2024 | Completed |
| If timetable has reasonable spread of cutover dates, continue to detail planning via 1 to 1 discussion | December 2023 – January 2024 | Completed |
| AEMO to share de-identified timetable of BDU cutovers to support industry readiness | February 2024 | In progress. To be shared at relevant AEMO IESS stakeholder forums. |

*Affected participants include those with existing and new BESS that will cut over from existing 2-DUID arrangement to a single DUID operation; and those with new BESS and a dependence on vendor readiness to support a single BDU DUID operation.

Finalisation of the BDU cutover schedule will require AEMO, BESS participants, and (where appropriate) vendor engagement to resolve periods of congestion. AEMO plans to seek endorsement of BDU cutover dates from participants in February 2024. Participants and AEMO hold responsibility for their readiness to undertake cutover activities – as described in [Chapter 3](#) of this document – in accordance with the endorsed BDU cutover date.

3 Bidirectional Unit (BDU) Cutover

The BDU cutover approach has been developed with mitigating risk of disruption to NEM operations as the primary consideration.

The process developed involves parallel visibility of both the 2-DUID arrangement and single BDU DUID (for each BESS) in AEMO's production systems for a period of several days. Participants will submit bids for the existing 2-DUID arrangement for dispatch intervals throughout the post-cutover period. In advance of the cutover day, participants will also submit bids on the new single BDU DUID for dispatch intervals that occur after the cutover date and time.

Participants will be responsible for submission of bids that reflect zero PASA availability on the new BDU DUID until the cutover time; and submission of bids that reflect zero PASA availability on the existing 2-DUID arrangement from and after the cutover time.

The reasons for adopting this approach include:

- Providing visibility of the single BDU DUID in AEMO's 7-day pre-dispatch and day-ahead pre-dispatch. This will allow AEMO and Participants to ensure bid and dispatch functionality is appropriate prior to the dispatch timeframe.
- Allowing capability for the cutover dispatch interval to occur during business hours (noting that registration changes come into effect at midnight). This is needed to ensure AEMO resourcing is available to carry out cutover activities and monitor dispatch throughout the cutover period.
- Allowing for short-notice deferral of the cutover day should NEM Operations require.
- Both Participant and AEMO will be able to monitor operation of the BDU DUID for a short period post the cutover day, ensuring no issues or defects arise prior to registration of the 2-DUID arrangement becoming inactive.

There are four phases of the cutover process, each with defined activities for participants and/or AEMO to complete:

1. **Prerequisites:** Preparatory activities required before the cutover schedule can commence.
2. **Pre-cutover:** Activities required over the period prior to cutover day, primarily to allow visibility of the single BDU DUID in pre-dispatch.
3. **Cutover day:** The day when BESS bidding and dispatch from the 2-DUID arrangement ceases and BDU bidding and dispatch commences.
4. **Post-cutover:** Activities required to complete the cutover process and cease operation of the 2-DUID arrangement.

A diagram is provided in Figure 4 IESS indicative bidirectional unit cutover timeline that illustrates the indicative timing for each step of the cutover from existing 2-DUID arrangement to single BDU DUID; the sequence of steps and the planning required to transition a BESS from the existing 2-DUID arrangement to the single (or BDU) DUID model.



3.1 Prerequisites for cutover

In February 2024, AEMO made available the necessary BDU Transition forms for completion by participants. The information provided in these forms will be used to establish the single BDU DUID in AEMO's pre-production and production systems.

Participants are required to submit these forms in respect of each BESS, and where applicable submit a complete application to transition to the Integrated Resource Provider participant category¹ a minimum of 35 days prior to the preferred BDU transition date. In deciding when to submit these forms, participants need to consider their intention to participate in the IESS Market Trial, as outlined in [Chapter 4](#).

IESS Market Trial is planned to commence on 2 April 2024. Participants wishing to participate in Market Trial will need to submit finalised pre-requisite information by (indicatively) **8 March 2024**, so that AEMO can process this information in time for 'Market Trial Phase 3: Bidirectional unit bidding and dispatch' (as set out in AEMO's Industry Testing and Market Trial Strategy).

Participants are expected to consult with AEMO and agree an appropriate cutover date for each BESS prior to submission of these forms, taking into consideration cutover timing preferences as described in [Section 2.4](#).

Once AEMO has confirmed its acceptance of all information provided, the single BDU DUID will be established in AEMO's pre-production environment, where the BDU DUID's ability to bid and be dispatched will be confirmed.

The following sections outline specific areas that participants need to consider in planning for their BDU cutover/s.

3.1.1 SCADA

AEMO is engaging with BDU participants and (if applicable) Network Service Providers throughout Q2 2024 regarding potential introduction of new Inter-Control Centre Communications Protocol (ICCP) IDs for a BDU's Market Management System (MMS) SCADA² signals. Based on participant preferences of whether new ICCP IDs are introduced, AEMO will carry out actions specified in [Section 3.2](#) relevant to SCADA.

3.1.2 Conformance monitoring

For conformance monitoring, participants will need to plan an update to their systems from 2-DUID/Target Aggregate Dispatch Group (ADG) to BDU for the participant dispatch conformance report. Currently, the existing 2-DUID arrangement is represented as a "Target Aggregate Dispatch Group (ADG)" in AEMO's system so conformance is monitored in aggregate. In future, conformance will be monitored via the single BDU DUID. The status of the three DUIDs in the conformance report will change during the pre-cutover, cutover and post-cutover periods as illustrated in the table below.

¹ Note that a Participant must transition to the IRP category prior to cutover to the single BDU DUID, as only an IRP can classify a BDU. Information regarding transition to the IRP category is provided in AEMO's DRAFT Integrated Resource Provider Transition Plan.

² Supervisory Control and Data Acquisition.



The following STATUS will be observed in the participant dispatch conformance report:

| Status | Pre-cutover | Cutover | Post-cutover |
|--------------------------------|--|---|---|
| BDU DUID | 'SUSPENDED' | AEMO lifts 'SUSPENDED' status, immediately changes to 'NORMAL' & can move to other statuses | One of active statuses ('NORMAL', 'OFF-TARGET', 'NOT RESPONDING', 'NC-PENDING', 'NON-CONFORMING') |
| 2-DUID & Target ADG | 2-DUID: ('NORMAL', 'OFF-TARGET') ADG: One of active statuses ('NORMAL', 'OFF-TARGET', 'NOT RESPONDING', 'NC-PENDING', 'NON-CONFORMING') | 2 DUIDs and ADG are 'SUSPENDED' by AEMO | 'SUSPENDED' (until deregistration of 2 DUIDs, after which DUIDs and ADG are removed from reporting) |

DUIDs in SUSPENDED status will be visible but with zero actuals, targets and errors.

No carry-forward of non-compliances to BDU DUID when 2-DUID is SUSPENDED or deregistered.

3.1.3 Metering

Participants need to engage with their Metering Service Providers (MSP) regarding NMI cutover arrangements, including and once a cutover date has been agreed with AEMO. Further information regarding NMI cutover arrangements is outlined in [Section 3.3](#).

Cutover activities as outlined in Section 3.2 can commence after these prerequisite activities have completed.

3.2 Bidirectional Unit (BDU) cutover activities

This section outlines the pre-cutover, cutover day and post-cutover activities required to transition a BESS to the single BDU DUID arrangement. These activities are to be undertaken on and around an agreed cutover date and prior to the transition period end date of 03 March 2025. This section is intended for the following audience:

- BESS participants
- BESS software vendors
- Other stakeholders for context, as needed.

The cutover time, tentatively proposed to be 1300hrs market time (AEST), occurs on cutover day and reflects:

- The last dispatch instruction³ for the existing 2-DUID arrangement occurring on the 13:00 dispatch interval.

³ That reflects the physical capability and market intentions for the BESS.

- The first dispatch instruction⁴ for the BDU DUID occurring on the 13:05 dispatch interval.

Participant bids (across energy, PASA and FCAS services) for the existing 2-DUID arrangement and new BDU DUID must reflect actual physical availability of the unit for any given period, as appropriate and as set out in the cutover schedule, ensuring no duplication across each of the DUID arrangements.

| Period | Day | Activity/ Action | Description | Dependencies | Participant Responsibility |
|-------------|-------------------|---|---|--|---|
| Pre-cutover | -28 to -16 window | Participant establishes new ICCP IDs for SCADA | If required, based on Network Service Provider preferences indicated to AEMO prior to this step (see 3.1), new ICCP IDs will be established. BESS participant and NSP to program the new ICCP IDs at the Remote Terminal Unit and link to the NSP master station, once advised by AEMO. | AEMO has established new ICCP IDs for SCADA on AEMO side. | Participant required to program new ICCP IDs for SCADA. |
| Pre-cutover | -28 to -16 window | Participant tests new ICCP IDs for SCADA | AEMO will coordinate testing between BESS participant, NSP and AEMO to test the establishment of the new ICCP IDs for SCADA. | Participant has programmed the new ICCP IDs for SCADA. | Participant required test new ICCP IDs for SCADA with AEMO and their Network Service Provider, coordinated by AEMO. |
| Pre-cutover | -12 | Implement BDU in Production | Based on the agreed cutover day for BDU, AEMO will establish the BDU in the Production with an active/effective date of -12 days. | Registration information completed and BDU established in Pre-production to AEMO's satisfaction. | Participant notified. |
| Pre-cutover | -11 | AEMO Notification BDU Bid submission can commence | AEMO associates zero target constraints to BDU until the agreed cutover time on cutover day. Post completion AEMO notifies the Participant BDU Bid submission can commence. | BDU available in production. | Receipt AEMO notification as precursor that cutover has commenced i.e., execute cutover activities. |
| Pre-cutover | -10 (approx.) | AEMO Notification BDU cutover pending | AEMO notifies BESS participant of what to expect on cutover day, e.g., MMS backup signals and AGC MW targets. | BDU available in production. | Receipt AEMO notification as precursor that cutover has commenced i.e., execute cutover activities. |
| Pre-cutover | -9 | Participant BDU bid submissions opens. | Participants to commence BDU bid submission leveraging the following guidelines: <ul style="list-style-type: none"> • Participant to submit bids on the BDU DUID for the days in the pre-cutover period (-9 to -1 days) with zero availability. • For the cutover day, bids submitted for the BDU DUID must reflect zero availability until the cutover time. • During the pre-cutover period, there will be no change required to bid | Participants notification bidding can commence. | Participants to commence BDU bid submission as described. |

⁴ That reflects the physical capability and market intentions for the BESS.

| Period | Day | Activity/ Action | Description | Dependencies | Participant Responsibility |
|-------------|-----------|---|---|--|--|
| | | | <p>submissions for the existing 2-DUID arrangement.</p> <ul style="list-style-type: none"> For the cutover day, bids submitted for the existing 2-DUID arrangement must reflect zero availability after the cutover time. Participant to submit bids on the existing 2-DUID arrangement for the post-cutover period to reflect zero availability as and until the 2-DUID deregistration date (+4 days after cutover). | | |
| Pre-cutover | -7 to -10 | MT PASA offers submitted | <p>In period -7 to -10 days preceding the cutover (i.e., week before the MT PASA offer week relevant to cutover), the participant to:</p> <ul style="list-style-type: none"> submit weekly offers for the BDU with Unit State of 'Inactive reserve' and zero availability until cutover day, then actual offer data for unit from cutover the cutover date. in parallel, amend offers for existing 2 DUIDs identifying them as Unit state of 'Retired' and zero availability from cutover date. | Participants notification bidding can commence. | Participant to submit and amend MT PASA offers as described. |
| Pre-cutover | -7 | First 7-day Pre-dispatch and ST PASA runs for cutover day. | Continuous Pre-dispatch runs inclusive of BDU. | Replicate BDU to Production | Consume first pre-dispatch and ST PASA instruction and confirm outcome as expected, report to AEMO any concerning anomalies. |
| Pre-cutover | -1 | Participant cutover day bid submission checkpoint | Participants to ensure bids (including those submitted using auto-bidding functionality) for existing 2-DUID arrangement and single BDU DUID are structured appropriately to ensure PASA availability accurately reported; and to ensure ability to meet dispatch instructions on and around cutover time. | Not Applicable | Participants to ensure bids structured appropriately on and around cutover time. |
| Pre-cutover | -1 | First Pre-dispatch and PD PASA runs | <p>AEMO confirm Pre-dispatch and PD PASA for cutover day runs inclusive of BDU.</p> <p>(If sufficient non-repairable anomalies and errors are present in Pre-dispatch AEMO may make a 'No Go' decision).</p> | Not Applicable | Consume Pre-dispatch and PD PASA instruction and confirm outcome as expected, report to AEMO any concerning anomalies. |
| Pre-cutover | -1 | Preliminary 'Go or 'No Go' decision confirmation from AEMO. | <p>AEMO review cutover day variables and ensure consistent with expectations for a successful cutover i.e., Bids, Pre-dispatch and NEM operational conditions reflect success path.</p> <p>AEMO communicates the preliminary 'Go' or 'No Go' decision with Participant.</p> <p>In the case of a no-go decision: BESS participants must contact their MSPs to notify of the decision</p> | The outcome of the go/no-go decision feeds into NMI cutover go/no-go activity. | <p>Receipt AEMO 'Go' or 'No Go' notification and execute cutover day activities and plan accordingly.</p> <p>Notify MSPs in the case of a 'No Go' decision and intent to reschedule.</p> |

| Period | Day | Activity/ Action | Description | Dependencies | Participant Responsibility |
|-------------|---|---|--|---|--|
| | | | <p>outcome and when the cutover date is rescheduled.</p> <p>None of the tasks proceeding this one will take place until a new cutover date is scheduled by AEMO and BESS participant and a go-decision is reached.</p> | | |
| Cutover day | 9am (approx.) | Final 'Go or 'No Go' decision confirmation from AEMO. | <p>On the morning of the cutover day, AEMO will make a final 'Go or 'No Go' decision based on operational conditions.</p> <p>AEMO communicates the preliminary 'Go' or 'No Go' decision with the Participant.</p> <p>In the case of a no-go decision: BESS participants must contact their MSPs to notify of the decision outcome and when the cutover date is rescheduled.</p> <p>None of the tasks proceeding this one will take place until a new cutover date is scheduled by AEMO and BESS participant and a go-decision is reached.</p> | The outcome of the go/no-go decision feeds into NMI cutover go/no-go activity. | <p>Receipt AEMO 'Go' or 'No Go' notification and execute cutover day activities and plan accordingly.</p> <p>Notify MSPs of the 'Go' or 'No Go' decision outcome and intent to reschedule.</p> |
| Cutover day | 9am to 5pm approx. | Participant, Plant, and associated MSP's action NMI cutover actions | See Section 3.3 for NMI cutover activities. | See Section 3.3 for NMI cutover activities. | See 3.3 for NMI cutover activities. |
| Cutover day | One hour prior to the first dispatch period post cutover, indicatively 12:05pm. | First P5min Pre-dispatch | Continuous P5min runs inclusive of BDU. | Not Applicable | Consume P5min Pre-dispatch instruction and confirm outcome as expected, report to AEMO any concerning anomalies. |
| Cutover day | At agreed cutover time | Monitor SCADA instructions and signals working as expected | <p>At the agreed cutover time, participant to monitor SCADA instructions and signals working as expected.</p> <p>If new ICCP IDs have been created, then the new ICCP IDs are active and the old IDs inactive. Switch and start receiving MMS backup signals from new ICCP IDs.</p> <p>If existing ICCP IDs retained, then monitor existing ICCP IDs working as expected against the BDU.</p> | AEMO have made old load/gen SCADA points inactive and new BDU SCADA point active. | <p>Monitor SCADA instructions and signals working as expected.</p> <p>Switch and start receiving MMS backup signals from new ICCP IDs.</p> <p>Report to AEMO if any issues arise.</p> |
| Cutover day | At agreed cutover time | Participant update system for conformance monitoring | At the agreed cutover time, participant to update system to cutover from 2-DUID/Target ADG to BDU monitoring (see Section 3 "Conformance monitoring") for the participant dispatch conformance report. | AEMO have updated from 2-DUID/Target ADG to BDU monitoring. | Update system to cutover from 2-DUID/Target ADG to BDU for participant dispatch conformance report. |

| Period | Day | Activity/ Action | Description | Dependencies | Participant Responsibility |
|---------------------|--|---|---|--|---|
| Cutover day | First dispatch interval post cutover, indicatively 1:05pm. | Review first dispatch period post cutover. | AEMO confirm dispatch instruction behaving as expected. | Not Applicable | Consume BDU dispatch instruction via existing mechanisms, respond as dispatched. |
| Post Cutover | Cutover time and day to + 4 days. | Monitor Dispatch and Pre-dispatch. | Participant and AEMO continues to monitor Dispatch, Pre-dispatch, PASA and network security in the post cutover period with view to confirm operating as expected. If anomalies detected in consultation with all affected parties a 'Rollback' may be declared. If no or manageable anomalies detected (insufficient to declare a 'Rollback'), then existing load and Gen DUIDs to be deregistered at +4 days. | Cutover has occurred. | Alert AEMO of anomalies or internal issues detected to allow assessment if rollback required. |
| Post Cutover | +4 days | NMI and Metering Standing Data (MSATS) updates. | Post confirmation a Rollback event was not declared (refer Section 3.3.2): AEMO will complete MSATS NMI updates as follows: <ul style="list-style-type: none"> Existing load NMI will be made extinct Generation NMI (generally) becomes the consolidated BDU NMI CR notifications sent to impacted parties. MPB to complete MSATS metering updates: <ul style="list-style-type: none"> Remove metering from load NMI. Consolidate all metering and metering register details to the generation NMI (repurposed to be BDU NMI). | Cutover has occurred and Rollback has not been declared. | MPB to action MSATS metering updates (in event rollback not declared). |

Variations to the schedule of cutover activities may eventuate based on agreement between participants and AEMO and as relevant.

3.3 National Meter Identifier (NMI) Cutover

The NMI cutover is a subset of activities as part of the wider BDU cutover process outlined in [Section 3.2](#), triggered by a preliminary 'go decision' the day prior to the scheduled BDU cutover date. This section is intended for the below audiences.

Those with direct involvement as outlined in cutover activities in [Section 3.3.1](#):

- BESS participants
- Metering Service Providers:
 - Meter Data Provider (MDP)
 - Metering Provider Category B (MPB)
 - Financially Responsible Market Participant (FRMP)

Those indirectly involved for awareness:

- Metering Service Providers:

- Distribution Network Service Provider (DNSP)
- Transmission Network Service Provider (TNSP)
- Registered Network Service Provider (NSP)

Each battery storage facility is currently assigned two NMIs, one for the load side of the battery and one for the generation side. As part of the BDU cutover, in most cases:

- Only one NMI is required for each BDU.
- The NMI currently used for generation (“retained” NMI) will be retained and assigned to the BDU.
- The NMI currently used for load (“virtual” NMI) will be made extinct effective after the cutover date.
- Where there is one Transmission Node Identifier (TNI) for load and other TNI for generation, one of these TNIs will be retained.

To ensure that meter reads are treated correctly in downstream settlement processes, the NMI consolidation will occur on the retained NMI and NMI configuration of the site will be altered. NMI consolidation and configuration changes will take place from the scheduled BDU cutover day onwards.

NMI consolidation

To ensure that both load and generation datastreams are available on the retained NMI, the load datastream will be consolidated over to the retained generation NMI.

Changes to NMI configuration

Changes to NMI configuration are reflected only in how data is captured and will not result in any change to the metering installation at the site.

NMIs and Genset IDs are currently associated one-to-one. A new Genset ID will be created and associated with the new BDU, which will be associated to an existing NMI at the station.

3.3.1 NMI cutover activities

This section outlines the NMI cutover activities that take place from cutover day into the post-cutover period. These activities are to be undertaken from the agreed BDU cutover date and prior to the transition period end date of 03 March 2025.

BESS participants should engage with their MDPs and MPBs throughout the BDU cutover process to advise activities occurring and timing, such as:

- Communicating in advance the nominated BDU cutover date.
- Articulating when they expect to see changes in the NMI, as part of the planning process.
- Communicating regularly throughout the NMI cutover process as activities begin and complete (per BDU cutover and transition plan).
- Confirming the result of go/no-go decision in the lead up to cutover day, and (if applicable) any rescheduled cutover dates.

A diagram is provided in Figure 4 IESS indicative bidirectional unit cutover timeline

Figure 4 IESS indicative bidirectional unit cutover timeline that illustrates the indicative timing for each step of the NMI cutover from existing 2-NMI arrangement to single NMI arrangement; the sequence of steps and the planning required to transition a BESS from the existing 1-NMI arrangement to a single NMI model.

Please note that all AEMO updates take place in market systems, and participants are required to update their own systems to accommodate these changes.

| Period | Day | Activity/ Action | Description | Dependencies | Responsible party | Informed | Notified via |
|-------------|------|---|---|---|-------------------|----------|-----------------------------|
| Pre-cutover | -1 | Notified of preliminary 'Go' 'No Go' decision outcome in BDU cutover activities | <p>As per the Bidirectional Unit Cutover in Chapter 3.</p> <p>As part of the BDU cutover activities, the day before planned cutover day, a go/no-go decision will be made by AEMO in conjunction with the BESS participant. Impacted participants will be notified by AEMO and BESS participant of the decision outcome.</p> <p>In the case of a no-go decision: participants will be notified by AEMO and BESS participants. None of the tasks proceeding this one will take place until a new cutover date is scheduled by AEMO and BESS participant and a go-decision is reached.</p> | BDU cutover activities go/no-go decision (Section 3.2). | BESS participant | MSP | Email notification (manual) |
| Cutover day | 12am | Genset ID associated to the retained NMI | <p>If a preliminary 'Go' decision is received the day before cutover day (-1), this activity will take place:</p> <p>At midnight on cutover day the new BDU GENSETID is now associated with the retained NMI for the BDU. This can be seen in the EMMS Data Model and results in changes to settlement, where metering data is received on the retained NMI only from this point onwards (retrospectively).</p> <p>If a Final 'No go' decision is received the morning of the scheduled cutover day, this activity may be reversed.</p> | Go decision. | AEMO | N/A | N/A |

| Period | Day | Activity/ Action | Description | Dependencies | Responsible party | Informed | Notified via |
|--------------|------------------|---|--|--|-------------------|------------|-----------------------------|
| Cutover day | 9am (approx.) | Final 'Go or 'No Go' decision confirmation from AEMO. | <p>On the morning of the cutover day, AEMO will make a final 'Go or 'No Go' decision based on operational conditions.</p> <p>AEMO communicates the final 'Go' or 'No Go' decision with Participant.</p> <p>In the case of a no-go decision: BESS participants must contact their MSPs to notify of the decision outcome and when the cutover date is rescheduled.</p> <p>None of the tasks proceeding this one will take place until a new cutover date is scheduled by AEMO and BESS participant and a go-decision is reached.</p> | The outcome of the go/no-go decision feeds into NMI cutover go/no-go activity. | BESS participant | MSP | Email notification (manual) |
| Cutover day | 9am – 5pm window | NMI datastreams consolidated | Metering raise CR against retained NMI to consolidate datastreams and update NCC. | Go decision. | AEMO Metering | MDP NSP | MSATS CR (auto – CR 5101) |
| Post-cutover | +1 to +4 window | MDPs and NSPs notified of datastream consolidation | <p>Metering notify the MDPs and NSPs via manual email that the datastreams have been consolidated to the retained NMI in MSATS.</p> <p>MDP/NSP activity required is determined by MDP/NSP, Metering inform only.</p> | AEMO consolidated datastreams. | AEMO Metering | MDP NSP | Email notification (manual) |
| Post-cutover | +1 to +4 window | MDP notified of SCADA changes | AEMO notify MDP of change in SCADA mappings via manual email. | AEMO update SCADA mappings. | AEMO Metering | MDP | Email notification (manual) |
| Post-cutover | +1 to +4 window | MSATS CR to extinct Virtual NMI | Metering raise CR to make Virtual NMI extinct in MSATS. The MPB and LNSP is notified. Participant will see change in MSATS the next day. | AEMO consolidated datastreams. | AEMO Metering | MSP | MSATS CR (auto) |

| Period | Day | Activity/ Action | Description | Dependencies | Responsible party | Informed | Notified via |
|--------------|-----------------|---|--|---|-------------------|----------|-----------------------------|
| Post-cutover | +1 to +4 window | AEMO notification to MPB | After AEMO Metering have made the Virtual NMI extinct, they will notify the MPB to consolidate meter(s) and register(s) from the Virtual NMI to the retained NMI via manual email and the automated MSATS CR. | AEMO raised CR to extinct Virtual NMI. | AEMO Metering | MPB | Email notification (manual) |
| Post-cutover | +1 to +4 window | MPB consolidates NMI | MPB retro updates NMI to consolidate all meter(s) and register(s) from Virtual NMI over to the retained NMI only. | AEMO notification to consolidate received. | MPB | N/A | N/A |
| Post-cutover | +1 to +4 window | AEMO notification to MDP | Notify MDP that MPB has gone ahead with changes to consolidate meter(s) and register(s) from Virtual NMI over to the retained NMI only via manual email. MDP activity required is determined by MDP, Metering only inform. | MPB consolidated NMI. | AEMO Metering | MDP | Email notification (manual) |
| Post-cutover | +6 (approx.) | Possible AEMO notification to MDP if meter data errors received | AEMO confirm if MDP has successfully completed: <ul style="list-style-type: none"> Data stream consolidation to the retained NMI; and Sending the correct data to AEMO. Correct data = whole day data on retained NMI from first trading interval on cutover day onwards. No data sent through on extinct NMI from first trading interval on cutover day. If any errors identified by AEMO, MDP notified of requirement to resolve by COB same day. | AEMO checking metering data week following cutover day. | AEMO Metering | MDP | Email notification (manual) |

3.4 Contingency arrangements

3.4.1 'No Go' Declared

The final AEMO 'No Go' decision is made early cutover day (if not called earlier) if final prerequisites for a successful cutover have not been achieved.

| PERIOD | DAY | ACTIVITY/ACTION | DESCRIPTION | DEPENDENCIES | STAKEHOLDER RESPONSIBILITIES |
|-------------------------------|----------|--|---|--|---|
| Pre-Cutover or Cutover | Variable | 'No Go' Decision Notification Received | <p>Unknown variables may influence a 'No Go' at any time in the Pre-cutover period.</p> <p>The final AEMO 'Go' and 'No Go' decision is made on the morning of a cutover day (or earlier).</p> <p>In event 'No Go' decision being declared:</p> <ul style="list-style-type: none"> • AEMO will roll back the zero target constraints allocation for cutover i.e., zero target constraints allocated to Load/Gen DUIDs at cutover time rolled back to non-zero, BDU non-zero rolled back to zero. • Participant existing Load and Gen DUIDs return to BAU bid characteristics, BDU DUID to reflect zero availability. • AEMO and Participant to reschedule cutover. • AEMO will not action NMI and data stream MSATS updates. • MDP and MPB do not action their 'Go' activities described in Section 3.2 | Participant and MSPs informed of 'No Go' decision. | Stakeholders execute their 'No Go' processes and plans. |

3.4.2 Rollback

When considering a rollback, an assessment will be made to determine the severity of the issue and whether there are remediation options to address the problem. Where it is not possible to remediate, a rollback may be declared in accordance with the relevant participant or participants.

A rollback may be:

- Temporary in nature until underlying anomalies corrected, then single BDU DUID returned to operation
- Permanent until anomalies are corrected and a new BDU cutover date can be established.

Where it has been determined that a rollback is required, AEMO will issue communications to affected stakeholders as soon as practicable.

| Period | Day | Activity/Action | Description | Dependencies | Participant Responsibility |
|---------------------|-----------------------------------|---|---|---|--|
| Post Cutover | Cutover time and day to + 4 days. | 'Rollback' Decision Notification Received | <p>AEMO to negotiate a Rollback time directly with participant and plant, then communicate with all affected.</p> <p>Rollback generally described as, at the negotiated time:</p> <ul style="list-style-type: none"> • AEMO Invoke BDU zero constraint targets (from non-zero) • AEMO revoke zero constraints target for existing LOAD and GEN DUIDs (from zero). | Participant, Plant and MSPs informed of 'Rollback' decision | Stakeholders execute their 'Rollback' processes and plans. |

| Period | Day | Activity/Action | Description | Dependencies | Participant Responsibility |
|--------|-----|-----------------|--|--------------|----------------------------|
| | | | <ul style="list-style-type: none"> Participants to resume bid submission using 2-DUID arrangement and pause bid submission using the BDU DUID. As required, MSATS data streams and metering data delivery to be rolled back to original pre BDU configuration changes (dependant if rollback is temporary or permanent in nature). | | |

4 Development and testing with AEMO's systems

IESS Market Trial is planned to commence on 2 April 2024. Participants wishing to participate in Market Trial will need to submit finalised pre-requisite information by (indicatively) **8 March 2024**, so that AEMO can process this information in time for 'Market Trial Phase 3: Bidirectional unit bidding and dispatch' (as set out in [AEMO's Industry Testing and Market Trial Strategy](#)).

AEMO is also making available a test environment (additional to AEMO's pre-production) called the Participant Development Support Environment (PDSE) to better support participants' development, internal testing, and market readiness for the IESS Rule changes. Unlike IESS Market Trial, there is no dependency on Participants to submit finalised pre-requisite information to make use of the BDU functionality in the PDSE. This is a temporary environment that is planned to be available with BDU functionality, from 22 January 2024 until 3 June 2024. Refer to [AEMO's IESS Participant Development Support Environment Fact sheet](#) for further information regarding the PDSE.⁵

For participants with new BESS that will be registered after 3 June 2024, AEMO suggests the following with regards to development and testing:

- (Optional) Use of the PDSE to assist with development of participants' solutions (prior to 3 June 2024)
- If an existing participant with other grid-scale assets (such as a scheduled generator), (optional) participation in AEMO's Market Trial Phase 2 - Settlements & Prudential Calculations, and
- As part of the AEMO's Registration process, use of AEMO's pre-production environment to perform required activities for completion of the Registration process. Please refer to [AEMO | Registration](#) for further information.

AEMO encourages Participants interested in the IESS Market Trial to ensure they are represented at [AEMO's Industry Testing Working Group \(ITWG\)](#).

⁵ Note that the IESS Market Trial scope is inclusive of testing the transition from the current 2-DUID BDU to single BDU DUID arrangement. This activity will not be supported by AEMO in the PDSE environment.

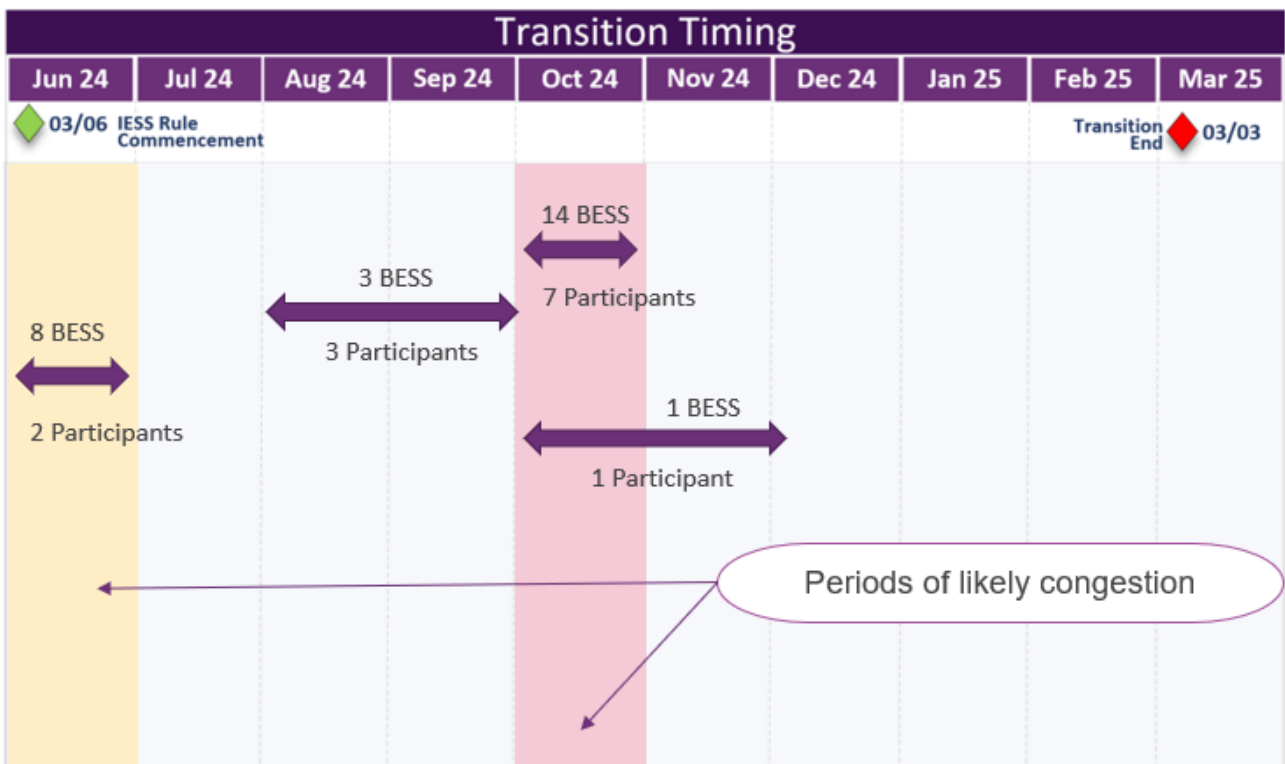
A1. Indicative BDU transition timetable

The figure below represents initially indicated preferred cutover times, as reported by Participants and/or based on vendor-provided information.

AEMO will engage with participants and vendors impacted by the identified periods of likely congestion throughout December 2023 and January 2024.

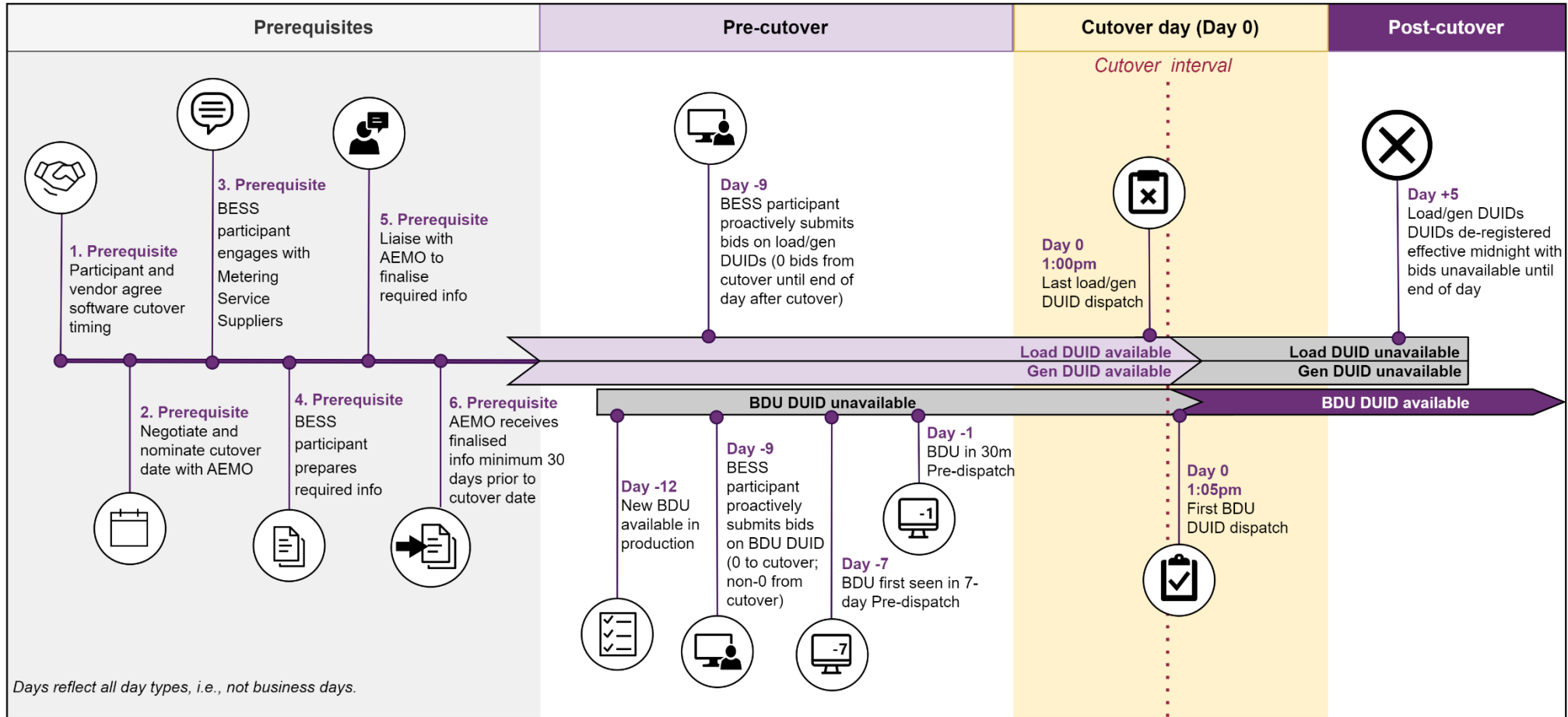
Future iterations of the BDU transition table, that address the below identified periods of congestion, will be communicated as and when appropriate at relevant AEMO stakeholder forums.

Figure 3 Indicative BDU transition timetable, as at November 2023



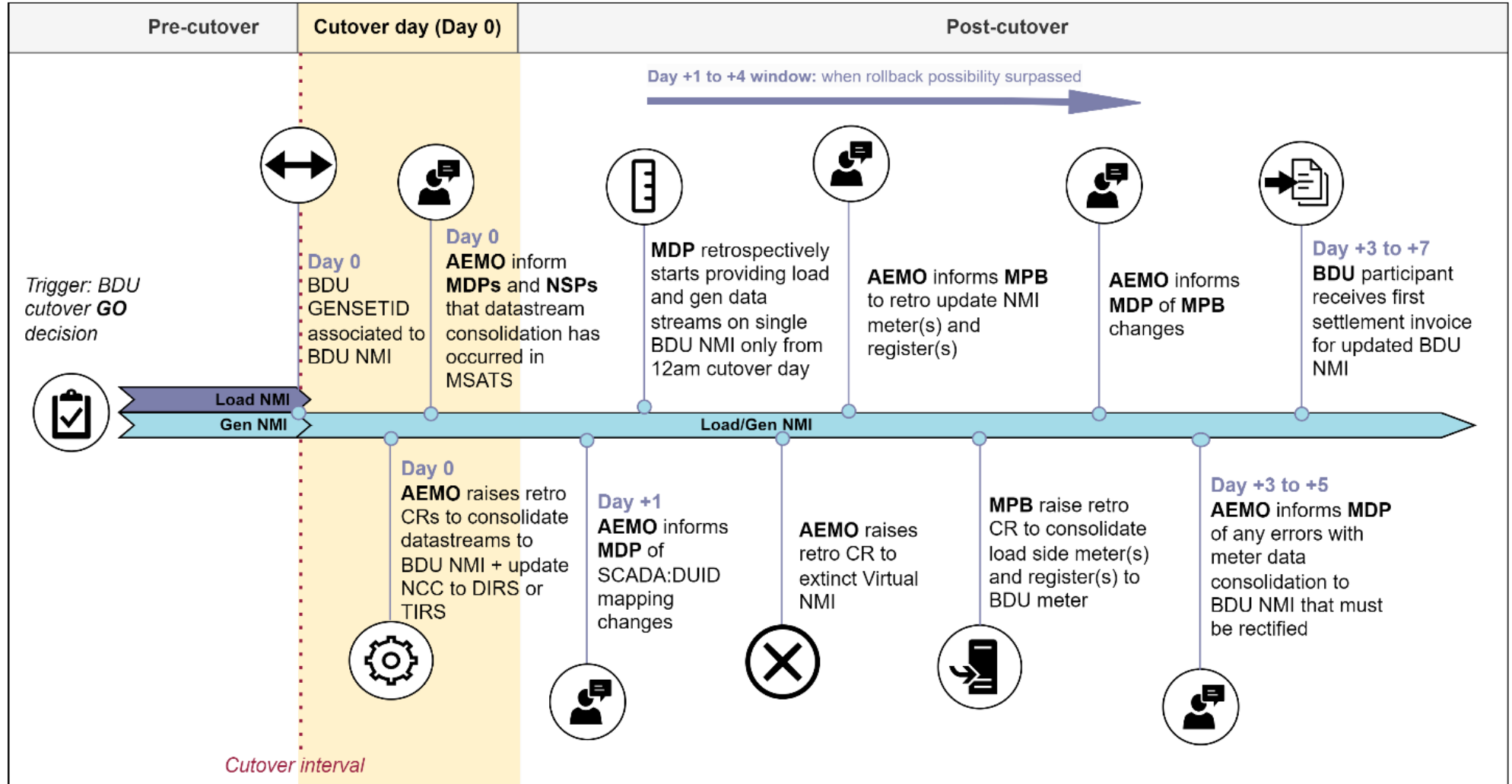
A2. IESS indicative bidirectional unit cutover timeline

Figure 4 IESS indicative bidirectional unit cutover timeline



A3. IESS indicative NMI cutover timeline

Figure 5 IESS Indicative NMI cutover timeline



Glossary

This document uses many terms and acronyms that have meanings defined in the National Electricity Rules (NER). The NER meanings are adopted unless otherwise specified.

| TERM | DEFINITION |
|-------------------------|--|
| AEMC | Australian Energy Market Commission |
| AEMO | Australian Energy Market Operator |
| BDU | Bidirectional Unit |
| BESS | Battery Energy Storage System |
| CR | Change Request (MSATS) |
| Cutover | System or process implementation event |
| DNBP | Distribution Network Service Provider |
| DUID | Dispatchable Unit Identifier |
| EMMS | Electricity Market Management System |
| FCAS | Frequency Control Ancillary Service |
| FRMP | Financially Responsible Market Participant |
| ICCP | Inter Control Centre Protocol Link |
| IESS | Integrating Energy Storage Systems rule |
| Industry testing | Informal, uncoordinated testing by participants in AEMO's IT environments. Self-testing of functionality such as connectivity, and/or coordinated multi-party testing of functional scenarios. |
| IRP | Integrated Resource Provider |
| IRS | Integrated Resource System |
| ITWG | Industry Testing Working Group |
| Market testing | Umbrella term covering industry testing, invitation industry testing and market trials |
| Market trials | Formal, industry coordinated test activities between participants' and AEMO's IT environments. Involves coordinated multi-party end-to-end testing of business process scenarios. |
| MDP | Metering Data Provider |
| MMS | Market Management System |
| MPB | Metering Provider (Category B) |
| MSATS | Market Settlements And Transfer Solutions |
| MSP | Metering Service Provider |
| MT PASA | Medium Term Projected Assessment of System Adequacy |
| NCC | NMI Classification Code |
| NECR | Non-Energy Cost Recovery |
| NEM | National Electricity Market |
| NEMDE | National Electricity Market Dispatch Engine |
| NER | National Electricity Rules |
| NMI | National Metering Identifier |
| NSP | Network Service Provider |
| PASA | Projected Assessment of System Adequacy |
| PDSE | Participant Development Support Environment |

| TERM | DEFINITION |
|------------|--|
| RTU | Remote Terminal Unit |
| SCADA | Supervisory Control and Data Acquisition |
| SGA | Small Generation Aggregator |
| TNI | Transmission Node Identifier |
| TNSP | Transmission Network Service Provider |
| Transition | Process of shifting from current to future operating state |