

# IESS BDU Readiness Focus Group

Including session notes

Integrating Energy Storage Systems

12 October 2023



# Attendees

Name	Organisation
Carlo Polisenio	AGL
Kyle Auret	AGL
Nitika Mahajan	AGL
Serena Huynh	AGL
Bree Sandley	Akaysha Energy
Nathan Everitt	Akaysha Energy
Ana Spataru	Clean Energy Council
Michael Statham	CS Energy
Dan Mascarenhas	EnergyAustralia
Frankie Wong	EnergyAustralia
Gagan Sharma	EnergyAustralia
Ranjan Thakur	EnergyAustralia
Joseph Giddings	EnergyOne
Michael Woodruff	Fluence
Lewis Wand	Iberdrola
Diana Tulip	Neoen
Andrew Wilkins	SA Water
Bruce Miller	Shell Energy
Steve Frimston	Shell Energy
Emma Fagan	Tesla
Trevor Lim	Total Energies



# Welcome

Ulrika Lindholm



We acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture.

**We pay respect to their Elders past, present and emerging.**

# AGENDA

#	Timing (AEST)	Topic	Objective	Presenter(s)
1	1:00 – 1:05 PM	<b>Welcome</b>		Ulrika Lindholm
2	1:05 – 1:10 PM	<b>Objectives &amp; ways of working</b>	<ul style="list-style-type: none"> <li>Outline and discuss how AEMO, BESS operators and bidding system vendors collaborates on industry readiness matters</li> </ul>	Ulrika Lindholm
3	1:10 – 1:20 PM	<b>IESS industry readiness overview</b>	<ul style="list-style-type: none"> <li>Outline industry readiness activities relevant to the focus group</li> </ul>	Emily Brodie
4	1:20 – 1:30 PM	<b>Planning for the BDU transition</b>	<ul style="list-style-type: none"> <li>Walk through and validate participants' transition scenarios</li> <li>Launch industry transition survey</li> </ul>	Carla Ziser
5	1:30 – 1:45 PM	<b>Cutover process (from dual to single DUID)</b>	<ul style="list-style-type: none"> <li>Outline and discuss proposed approach to cutover from dual to single DUID arrangements</li> </ul>	Carla Ziser
6	1:45 – 2:00 PM	<b>BDU Bidding</b>	<ul style="list-style-type: none"> <li>Overview of proposed changes to bidding</li> </ul>	Luke Barlow
7	2:00 – 2:25 PM	<b>Q&amp;A</b>	<ul style="list-style-type: none"> <li>Open Q&amp;A</li> </ul>	Ulrika Lindholm
8	2:25 – 2:30 PM	<b>Next steps &amp; close</b>		Ulrika Lindholm

## APPENDICES

A	IESS glossary
B	BDU Cutover timeline descriptions
C	Bid format – Bidirectional Unit
D	NEM Reform engagement options and resources
E	AEMO competition law meeting protocol

*“Please note that this meeting will be recorded by AEMO and may be accessed and used by AEMO for the purpose of compiling minutes. By attending the meeting, you consent to AEMO recording the meeting and using the record for this purpose. No other recording of the meeting is permitted”*

# 2. Objectives & ways of working

Ulrika Lindholm



# Introductions

## Background & Purpose

- This is the first meeting with the IESS BDU Readiness Focus Group;
  - Implementation design for the bidirectional unit model under the IESS June 2024 release has been [finalised](#).
  - The [IESS Readiness Approach](#) outlines that participants should plan for timely system/process changes in managing their operations to achieve compliance with the IESS rule.
  - Battery operators and bidding vendors have the option of a longer and more flexible transition period and this needs to be coordinated with AEMO.
  - Participants have requested regular engagement on the BDU model implementation to enable dialogue and collaboration on key industry concerns.
- This Focus Group aims to promote detailed discussion around how AEMO, battery operators and bidding vendors collaborate on industry readiness.
  - The initial focus is on the development of the BDU/IRP Transition plan and detailed cutover plans in the coming three months.

## Ways of collaborating

- Questions and comments are welcome, either in the chat or by raising your virtual hand. AEMO will answer questions throughout the presentation, as well as a at dedicated Q&A time at the end.
- Please introduce yourself (name & organisation) in any interactions.
- Before attending, participants should peruse the appropriate meeting protocol. Please visit: <https://aemo.com.au/en/consultations/industry-forums-and-working-groups>

# Participation and administration

This is the first meeting of this Focus Group. AEMO is open to nominations from participants.

## Participation



- Aimed at participants with existing and planned grid scale batteries and bidding system vendors, that are affected by the IESS rule and will transition from dual to a single DUID.
- Nominees with suitable experience and expertise, for example regulatory managers, trading and product managers.
- A detailed understanding of the IESS reform initiative and authority to participate in discussions about implementation activities is required.
- One primary and one alternative contact to be nominated

## Format



- Short term Focus Group under NEM Reform Implementation Forum (IF)
- Readiness and transition related risks and issues escalated to IF. Outcomes from Focus Group reported back to IF.
- Collaborative and consultative rather than a decision-making group
- Focus on readiness-related matters rather than debating specific policy.

## Meetings



- Video conference
- Monthly cadence (last 2023 meeting in mid-Nov, recommence Feb 2024)
- 1.5hr duration
- Additional meetings as required.

## Administration



- Meeting material distributed prior
- Minutes and presentations made publicly available.

**ACTION:** Feedback and alignment on the approach is welcome.



# Notes

- AEMO spoke to intent of BDU readiness focus group. The IESS BDU Readiness Focus Group will focus on industry readiness for the bidirectional unit model under the IESS June 2024 release. The initial priority is the development of the BDU Transition plan.
- No feedback was received from participants on objectives and ways of working.

# 3. IESS industry readiness overview

Emily Brodie



# Key areas of participant support

Consistent with the [IESS readiness approach](#), AEMO is providing participants with support through:

- ✓ Engagement via forums, workshops, 1to1 discussions etc
- ✓ Technical documentation\*
- ✓ Transition, test and go-live plans\*
- ✓ BDU participant development support environment from 22 Jan 2024
- ✓ Industry testing & market trial (pre-prod) from 02 Apr to 24 May 2024

During this session we will identify and discuss factors that will underpin the upcoming “*BDU transition and cutover plan*”

\*Publication dates available on slide 12 and via monthly [Implementation Forum](#)

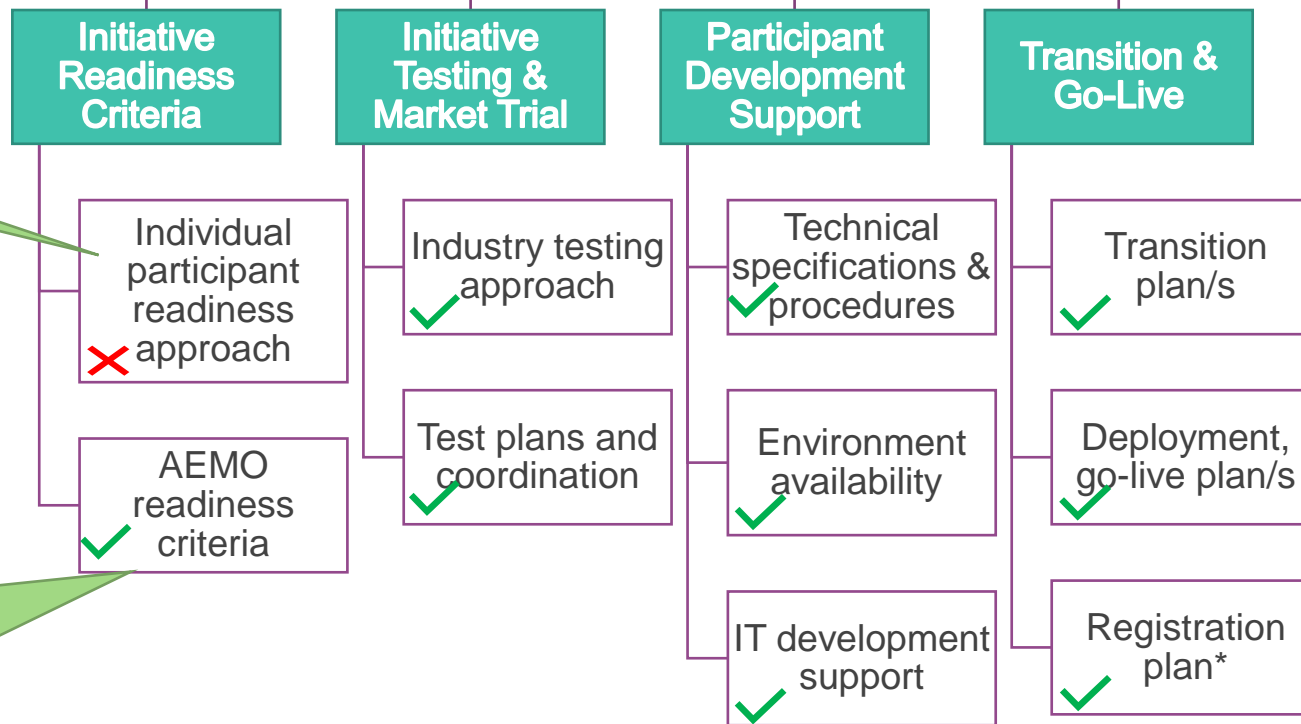
# Context: NEM Reform program industry strategy

## NEM REFORM READINESS STRATEGY (ALL INITIATIVES)

### IESS JUNE 2024 READINESS APPROACH

Individual participant (or participant category) readiness is **NOT** a dependency for go-live.

- AEMO Market systems updated and tested
- AEMO business needs to be ready to operate
- AEMO IT support needs to be in place



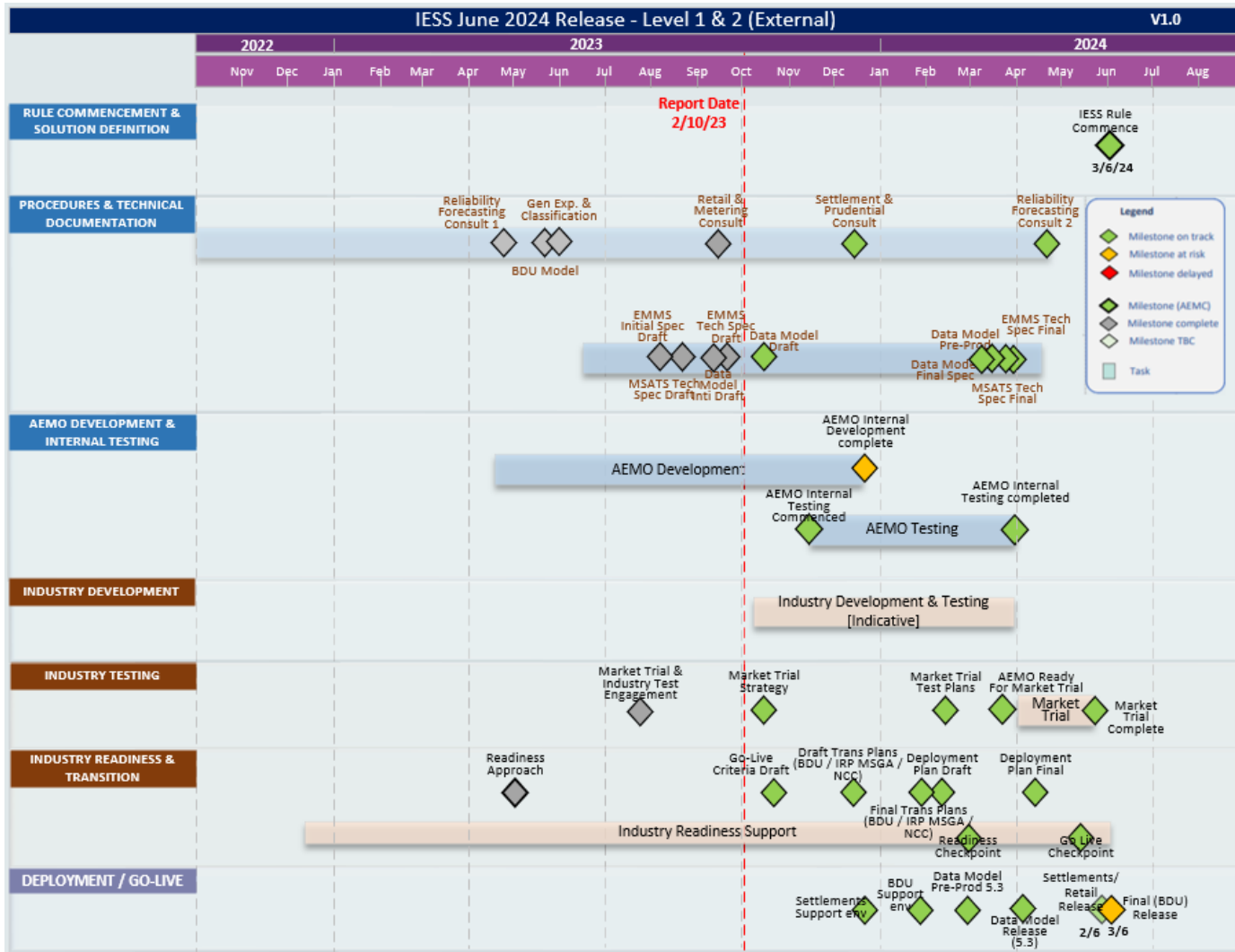
IESS readiness approach adopts the standard NEM Reform program framework

*\*Reaccreditation not required for existing participants*

## RISK & CONTINGENCY MANAGEMENT ✓

## INITIATIVE READINESS REPORTING & GO-LIVE CRITERIA MANAGEMENT ✓

# June 2024 – IESS final release



- IESS milestones are monitored and discussed monthly via the [Implementation Forum](#)
- Sign up to Implementation Forum via [nemreform@aemo.com.au](mailto:nemreform@aemo.com.au)

# Notes

- AEMO provided an overview on the IESS project and approach to industry readiness and participant support. AEMO encouraged members to reach out to the IESS team if they would like 1to1 discussions by emailing [IESS@aemo.com.au](mailto:IESS@aemo.com.au). Key areas on how AEMO will support participants through the BDU transition is outlined in this pack.
- AEMO presented further context on the NEM Reform Program industry readiness strategy.

# 4. Planning for the BDU transition

Carla Ziser



# BDU transitional arrangements

AEMO has developed a transition approach that provides participants with some flexibility of when and how their BESS can transition to the new 1 DUID BDU arrangement.

AEMO understands that some participants may:

- Have both ‘new’ and ‘existing’ BDUs
- Need to coordinate transition with their bidding system vendor.

Transitional arrangements (per the IESS Rule) have been enhanced to accommodate these factors.

## ENHANCED TRANSITIONAL ARRANGEMENTS

PARTICIPANT TYPE	TRANSITIONAL ARRANGEMENT
IRS participants that start operations <u>on and from</u> 03 Jun 2024	<ul style="list-style-type: none"> <li>• Expected to begin operations as a single DUID.               <ul style="list-style-type: none"> <li>• Where circumstances do not support this approach, please liaise with AEMO.</li> </ul> </li> </ul>
<b>Any IRS participant operational prior to 03 Jun 2024</b> <ul style="list-style-type: none"> <li>- Existing IRS participant</li> <li>- New IRS participant</li> </ul>	<ul style="list-style-type: none"> <li>• AEMO is offering an extended transition period (to move from 2 DUIDs to 1 DUID) of up to 03 March 2025.</li> <li>• Must apply to register as an IRP <u>by</u> 03 Sep 2024</li> <li>• Must complete IRP registration by 03 December 2024.</li> <li>• AEMO will facilitate this process.</li> <li>• Will be “taken to be registered as an <i>Integrated Resource Provider</i> in relation to the <i>integrated resource system</i>” from 3 June 2024 onwards – i.e. no need to apply.</li> <li>• AEMO may require information from participants to complete this registration</li> </ul>

## IESS RULE ON TRANSITION

PARTICIPANT TYPE	IESS RULE ON TRANSITION
<i>New IRS participant*</i> <ul style="list-style-type: none"> <li>• BESS operational since Dec 2021</li> </ul>	<ul style="list-style-type: none"> <li>• Registered between 02 Dec 2021 &amp; 02 Jun 2024</li> <li>• Move to 1-DUID from 03 Jun 2024</li> </ul>
<i>Existing IRS participant*</i> <ul style="list-style-type: none"> <li>• BESS operational prior to Dec 2021</li> </ul>	<ul style="list-style-type: none"> <li>• Registered prior to 02 Dec 2021</li> <li>• Move to 1-DUID from 03 Jun 2024</li> </ul>

\*Defined terms in IESS Rule (NER 11.145.1)  
**AEMC** | [IESS determination and rule](#)



# Industry readiness for BDU bidding & dispatch

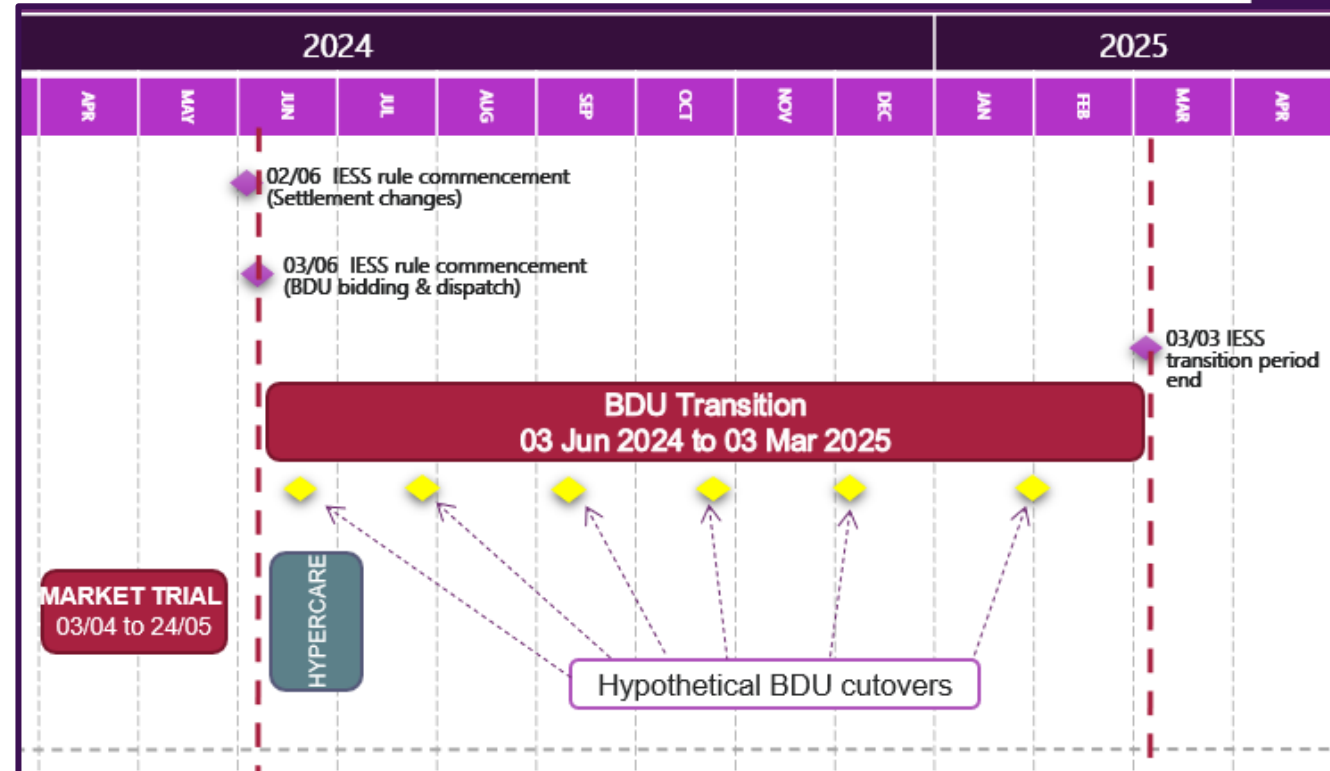
Two main aspects to consider:

## 1. BDU transition

Establishing a timetable for transitioning batches of BESS to BDU operations across the transition period (03 Jun 2024 to 03 Mar 2025)

## 2. BDU cutover

Developing a detailed cutover process (run sheet of activities) for converting a BESS from 2DUID to 1DUID over several days (see section 5 for draft process)



# BDU transition and cutover plan: Proposed timeline

DATE	ACTION
Thu 12 Oct	BDU readiness focus group – seeking early feedback on aspects of BDU transition and cutover plan
Thu 12 Oct	Transition survey launched asking participants to provide feedback on initial BDU transition and BDU cutover approaches to AEMO
Thu 26 Oct	<ul style="list-style-type: none"> <li>• Survey responses due</li> <li>• Feedback on BDU transition and cutover plan due</li> </ul>
Fri 15 Dec	Publish DRAFT BDU transition and cutover plan for comment
Fri 19 Jan	Participants to provide feedback on draft plan
Wed 31 Jan	AEMO publishes FINAL BDU transition and cutover plan

# Seeking feedback: Proposed transition principles

1. Transition period will spread BDU cutovers over 9 months such that the transition to BDU bidding and dispatch is manageable and as efficient as possible for both participants and AEMO
2. Participants should be provided with implementation flexibility where feasible, but not to the extent that cutovers are congested at any time in the transition period
3. Participants and AEMO must continue to fulfil all regulatory and compliance obligations during transition and system cutover periods
4. NEM operations should be uninterrupted during periods of transition and cutover
5. Transition and cutover risks should be minimised
6. Transition planning should introduce more certainty for participants' implementation planning
7. Participants and AEMO are each responsible for their own transition and go-live planning
8. Participants will use the BDU transition and cutover plan as the basis of their implementation plans, and will develop individual plans that have regard to the key activities and dates
9. Participants and AEMO are to communicate any issues with meeting their BDU transition and cutover responsibilities as soon as possible.

# Seeking feedback: Proposed scope

## IN SCOPE

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

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

## 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 (separate transition plan for these IRP registrations)
- IESS settlement (NECR) changes.

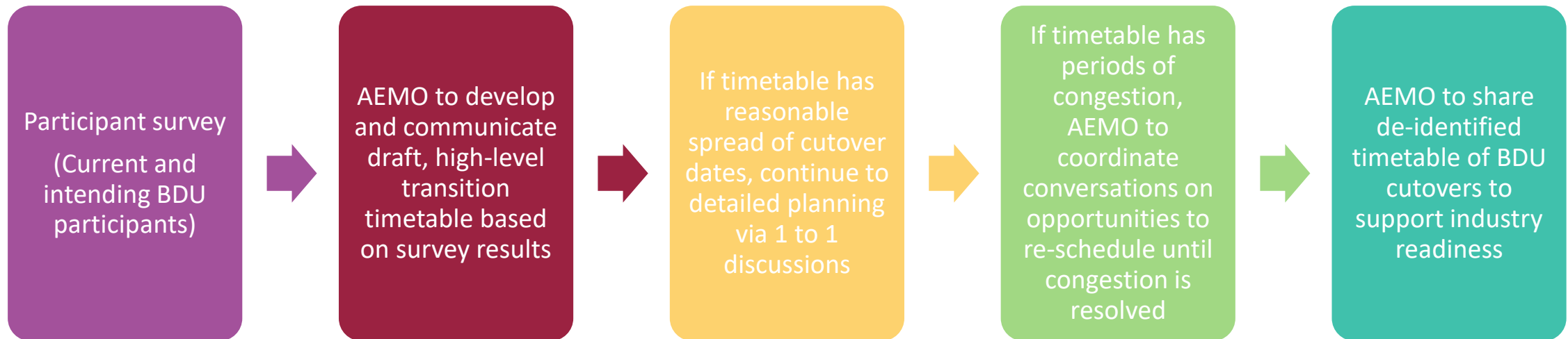
## WHERE SCOPE IS UNCERTAIN

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

# Factors that may influence transition timetable

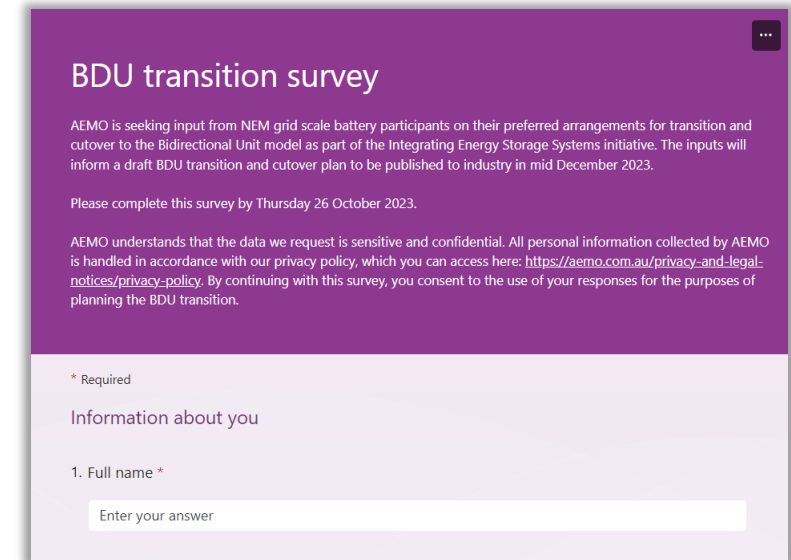
- **Whether BESS is registered before or after 03 Jun 2024**
  - Before – more likely to need transition period
  - After – more likely to commence operations as 1DUID (no transition).
- **Approach to migrating a portfolio of multiple BESS to 1DUID operations**
  - Some participants have expressed a preference to cutover all BESS at once
  - Others are seeking to pilot the cutover of one BESS before shifting the remainder of the portfolio.
- **Whether participants have a common bidding system vendor**
  - Vendors looking to efficiently coordinate cutover to 1-DUID BESS operations across portfolios.
- **Whether participants wish to undertake testing during the industry test period or are comfortable with using pre-prod in their own time**
  - AEMO is likely seeking an industry partner to pilot the BDU cutover process and BDU bidding & dispatch.

# Seeking feedback: Proposed approach to BDU transition



# How planning considerations will be captured – Transition survey

- Seeking to understand considerations for *each* BESS that will transition from dual to a single DUID.
- 4 categories of questions:
  - Information about the participant
  - Bidding software
  - Transition timing and circumstances
  - Interest in market trial.
- Key dates:
  - Survey launch Thursday 12 October
  - Responses due Thursday 26 October.
- One response per participant.
- Data to be treated as confidential and sensitive by AEMO.
- Output will inform draft BDU transition and cutover plan.



**BDU transition survey**

AEMO is seeking input from NEM grid scale battery participants on their preferred arrangements for transition and cutover to the Bidirectional Unit model as part of the Integrating Energy Storage Systems initiative. The inputs will inform a draft BDU transition and cutover plan to be published to industry in mid December 2023.

Please complete this survey by Thursday 26 October 2023.

AEMO understands that the data we request is sensitive and confidential. All personal information collected by AEMO is handled in accordance with our privacy policy, which you can access here: <https://aemo.com.au/privacy-and-legal-notice/privacy-policy>. By continuing with this survey, you consent to the use of your responses for the purposes of planning the BDU transition.

\* Required

Information about you

1. Full name \*

Enter your answer

Please access survey here:  
<https://forms.office.com/r/AqJKHds5dR>

Contact the project at [IESS@aemo.com.au](mailto:IESS@aemo.com.au) if any issues with accessing or filling out the survey.

**Timely responses are appreciated as this input is required to coordinate the transition.**

# Notes

- AEMO outlined the transitional arrangements to provide participants with some flexibility of when and how their BESS can transition to the new 1 DUID BDU arrangement.
- AEMO advised that a survey will be distributed to obtain information on participants' likely transition scenarios. The inputs are required for AEMO to coordinate the transition and will feed into a draft BDU transition and cutover plan. AEMO encouraged participants to coordinate responses with their vendors. Feedback received will be treated as confidential and sensitive by AEMO.
- AEMO provided details on main aspects that participant should consider on BDU transition and BDU cutover. In addition, AEMO presented a proposed timeline for the BDU transition and cutover plan. AEMO intends to publish a draft transition plan on 15 December at the latest but is working towards publishing earlier to avoid clash with the holiday period.
- AEMO outlined the proposed transition principles, scope, factors and approach to transition and cutover and encouraged participants to provide feedback.



# Notes

Raised by	Question/Issue Raised	Response
<b>Carlo Poliseno, AGL</b>	Where a participant has both BDU and other asset types, will they transfer to an IRS Participant? If so, are there any impacts for the other asset types?	Participants with BDUs will transfer to an Integrated Resource Provider (IRP) participant category. The IRP is intended to be a universal category and provides flexibility in how an organisation may want to organise their other asset types. Infographic in AEMC's final determination* is a useful resource to identify the interaction of different participant types and the types of units they can classify in relation to the IRP.
<b>Ranjan Thakur, EnergyAustralia</b>	When it says that a new IRS participant will be taken to be registered as an Integrated Resource Provider i.e. no need to apply – does that mean that AEMO will automatically will do it and will they notify us when it is happening?	Correct, they would automatically transfer over and there is no need to formally apply, however AEMO may require information from the participant to complete the registration transfer. A process will have to be agreed to confirm and communicate between AEMO and industry. AEMO will start to firm up details before end of the year.
	Existing IRS participants must apply to register by 3 September 2024, but that will be dictated by when people opt in for transition and cutover.	As AEMO has introduced flexibility under the enhanced transition arrangements, there may be circumstances where the timing of the IRP registration becoming effective may differ to when the BDU cutover occurs. This depends on the participant's individual scenario and circumstances and will be worked through in the upcoming transition and cutover planning.
<b>Andrew Wilkins, SA Water</b>	As previously noted to AEMO, the IRP Infographic in AEMC's final determination* potentially doesn't capture all participant scenarios, depending on how they are registered in the market.	Noted and AEMO to suggest timing for 1to1 conversation with SA Water.

\* AEMC, IESS Rule, Figure 1 p.6 [https://www.aemc.gov.au/sites/default/files/2021-12/1. final\\_determination\\_-\\_integrating\\_energy\\_storage\\_systems\\_into\\_the\\_nem.pdf](https://www.aemc.gov.au/sites/default/files/2021-12/1. final_determination_-_integrating_energy_storage_systems_into_the_nem.pdf)

# Notes

Raised by	Question/Issue Raised	Response
Rowan Rogers, Windlab	If a participant that is intending to register before the 3 <sup>rd</sup> of June 2024, is there a preferred option from AEMO's perspective as to how that participant registers automatically as an IRS or as a BDU or combination.	<p>Registration is dependent on what your capacity is going to be: If it's only a load, you would register as a customer, if it's only generation, you would register as a generator. Specific requirements apply if you want to register as a generator or as a customer, and for an IRP you would have to fulfil requirements for both in the registration process.</p> <p>Batteries registered after December 2021 will transition to an IRP.</p>
Emma Fagan, Tesla	Has AEMO reached a final position of new IRS that may enter the market using the same bidding platform systems as existing IRS/ market participants? Are they given until the Mar-25 timeline? How that's going to work to avoid us needing to potentially to developed 2 forms of the same software that need to be operating in parallel.	<p>For participants that start operations from or after the 3<sup>rd</sup> of June, the default expectation is that they would begin operation as a single DUID. However AEMO is conscious that there will be extenuating circumstances which we will try to accommodate.</p> <p>Vendor support is the extenuating circumstance that AEMO is the most aware of and there is a consideration in the transition planning around what vendors can support and how we would make that work.</p> <p>AEMO is launching a survey as part of this meeting to ask these questions. The ask is that market participants work directly with service providers while preparing to provide the information to AEMO.</p>

# Notes

Raised by	Question/Issue Raised	Response
<p><b>Ranjan Thakur,</b> EnergyAustralia</p>	<p>When is the best time in a month to transition?</p>	<p>AEMO's guidance would be that there are no block out times other than normal shutdown periods e.g. over the holidays.</p> <p>The cutover process will be over multiple business days so suggestion to avoid weeks with public holidays. No particular week of the month is better than the other.</p>
<p><b>Carlo Poliseno, AGL</b></p>	<p>From a planning perspective, is there a particular time that would work best for AEMO? For example start, middle or end of the month?</p>	<p>We see this as an iterative process with further guidance to be provided in a draft plan, as outlined in the slide pack.</p>
<p><b>Michael Woodruff, Fluence</b></p>	<p>Regarding point 4 of the principles.</p> <p>Would it be more likely that a participant would need to transition based on capacity rather than the number of assets?</p> <p>For example, transitioning smaller assets has a materially less impact on the market than larger assets. Will this play into AEMO's transition plans?</p> <p>In addition, is there a limit on the number of assets that can transfer at a single time?</p> <p>If the constraints are based on the number of assets, it could potentially place a restriction on how a bidding vendor can transition. Vendors would want to know of these restrictions as soon as possible.</p>	<p>Specifics of when and how many assets that will be able to cutover at the same time are yet to be worked through. However, volume of participants on a day is a capacity consideration for AEMO.</p> <p>Good feedback. Noted.</p>

# Notes

Raised by	Question/Issue Raised	Response
Andrew Wilkins, SA Water	Does AEMO have a view of the process to resolve any differences between AEMO and industry expectations on transition schedule?	<p>AEMO's preference is to collaborate with industry on this transition plan. We have a good amount of time to work this out (8 months) and a robust process to work within.</p> <p>If vendors have a set period of time where they could support both models, it would be helpful for AEMO to know of that period.</p> <p>Participants should have a discussion with their vendor to understand the vendor's restrictions and subsequently feed this information back to AEMO.</p>
Ranjan Thakur, EnergyAustralia	Do we have a view into how many BDUs we have in the NEM?	<p>Existing BESS are listed in the NEM registrations list: <a href="https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/participate-in-the-market/registration">https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/participate-in-the-market/registration</a></p> <p>Connections pipeline is published in "Key connection information" list: <a href="https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information">https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information</a></p>

## ACTIONS:

- AEMO to follow up with SA Water on their IRP registration scenario.
- Participants to provide their feedback to the Transition Survey by **Thursday 26 October**.
- AEMO to provide participants a list of survey questions.

# 5. Cutover process (from dual to single DUID)

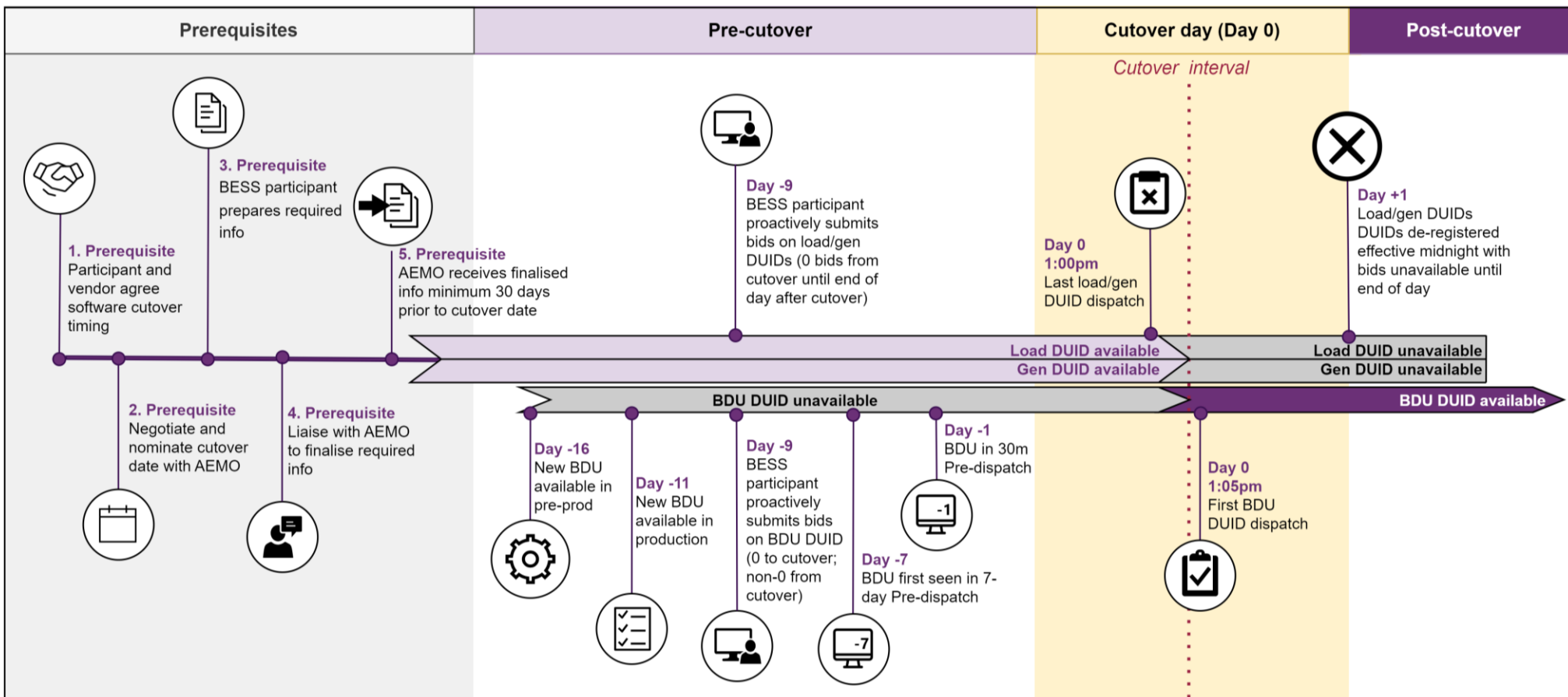


Carla Ziser



# IESS Indicative Bidirectional Unit Cutover Timeline

This diagram outlines the high-level approach AEMO intends taking to cutover existing batteries with dual DUIDs to a new, single bidirectional DUID.



## Process notes:

- Cutover to occur during the transition period: 3 June 2024 - 3 March 2025.
- Days and times depicted are indicative only.
  - First possible instance of Day -16 is 3rd April 2024 (Market Trial start).
  - First possible instance of Day -11 is 3rd June 2024 (Rule effective date).
- Should BESS participants like to take part in Market Trial, the prerequisites listed below must be complete before Market Trial commences 3rd April 2024.
- AEMO must receive all info (i.e., no further changes required by AEMO or participant to data) necessary to transition no later than **30 days** prior to the intended cutover date.
  - Info required will vary per participant and their registration date, details TBC.

# Seeking feedback: BDU cutover process

- What are your views on the BDU cutover process?
- What issues, omissions or errors do you see in the process? How should these be addressed?

Please provide your comments to [iess@aemo.com.au](mailto:iess@aemo.com.au) by Thu 26 Oct

# Notes

- AEMO provided details on the IESS Indicative BDU cutover timeline diagram which outlines the high-level approach AEMO intends taking to cutover existing batteries with dual DUIDs to a new, single BDU DUID.

Raised by	Question/Issue Raised	Response
Carlo Polisenio, AGL	Will the prerequisite period open prior to 3 April 2024?	Yes, AEMO's view is that the prerequisite period will have to open prior to 3 April 2024 before the start of the market trial. This is to ensure that participants can be established in the pre-production environment and participate in the market trial in April.
Michael Woodruff, Fluence	Will there be an environment where participants and vendors could submit bids and validate?	AEMO will make available a Participant Development Support Environment prior to preproduction that allows you to bid and get targets. More information is provided in this pack.

## ACTIONS:

- Participants to provide their views on the BDU cutover process. What issues, omissions or errors do they see in the process? How should these be addressed? Comments to be directed to [iess@aemo.com.au](mailto:iess@aemo.com.au) by Thursday 26 Oct 2023.



# 6. Bidding – Participant Support

Luke Barlow



# Participant development support environment

AEMO will be providing a participant development support environment (indicatively) from 22 Jan 2024, for use by participants with BESS already in operation.

## The participant development support environment will:

- Be provided to support participant development of changes against “beta” versions of market systems capability;
- Be based on a data set from Pre-Production;
- Support bidding & dispatch for the new BDU model only (and will not support integrated/end-to-end activities);
- Be established on a temporary basis and decommissioned at go-live.

## Tentative arrangements for participation:

- Participants wishing to take part must be a registered participant/user in Pre-Production;
- Existing DUIDs (BESS gen/load pairs) from Pre-Production will be available;
- **Participants will need to advise AEMO if/when wanting to use the environment**, as AEMO will create a new BDU DUID;
- Issues/queries arising during use of the environment are to be raised via [iess@aemo.com.au](mailto:iess@aemo.com.au) and will be addressed with best endeavours.

# Bid structure: Energy

	Load	Generation
Price Bands	1 to 10	1 to 10
Band Availabilities	Positive <ul style="list-style-type: none"> <li>• Band MW <math>\leq</math> Registered Load Capacity</li> <li>• <math>\sum</math> Bands MW <math>\geq</math> Registered Load Capacity</li> </ul>	Positive <ul style="list-style-type: none"> <li>• Gen Band MW <math>\leq</math> Registered Gen Capacity</li> <li>• <math>\sum</math> Gen Bands MW <math>\geq</math> Registered Gen Capacity</li> </ul>
Ramp Rate Up/Down	Positive/Positive	Positive/Positive
Max Availability	Positive	Positive
PASA Availability	Positive	Positive
Energy Limit (optional)	Positive (Max Energy Limit)	Positive (Min Energy Limit)

# Bid structure: FCAS

	Regulation		Contingency
	Load	Gen	
Price Bands	1 to 10	1 to 10	1 to 10
Max Availability	Positive	Positive	Positive
Band Availabilities	Positive $\sum \text{Load Bands MW} + \sum \text{Gen Bands MW} \geq \text{Registered Max Capacity}$ Band MW $\leq$ Registered Max Capacity		Positive $\sum \text{Bands MW} \geq \text{Registered Max Capacity}$ Band MW $\leq$ Registered Max Capacity
Minimum Enablement	Negative or 0	0 or Positive	Negative or Positive
Maximum Enablement	Negative or 0	0 or Positive	Negative or Positive
Low Breakpoint	Negative or 0	0 or Positive	Negative or Positive
High Breakpoint	Negative or 0	0 or Positive	Negative or Positive

# Bid structure: Design details

- Bid “DailyEnergyConstraint” for the existing two-DUID model (defined for a trading day) will change to an interval-based bid Min Energy/Max Energy limit for the single DUID BDU model.
- NOTE: The option for semi-scheduled generating units and bidirectional units to submit fast start inflexibility profiles has been removed from the [NER](#).

## Energy

TI	DUID	Direction	BidType	Max Avail	Ramp Up Rate	Ramp Down Rate	Fixed Load	Energy Limit	PASA Avail
1	DUID_BDU1	GEN	ENERGY	250	8	8		0	250
1	DUID_BDU1	LOAD	ENERGY	200	6	6	10	100	220

## FCAS

TI	DUID	Direction	BIDTYPE	Max Avail	Enablement Min	Low BreakPoint	High BreakPoint	Enablement Max
1	DUID_BDU1	GEN	RAISEREG	100	0	0	0	100
1	DUID_BDU1	LOAD	RAISEREG	40	-100	-100	-40	0
1	DUID_BDU1		RAISE6SEC	40	-100	-100	-40	100

# Bid structure: Bands

## Price Bands

Settlement Date	DUID	Direction	BidType	PriceBand1	PriceBand2	...	PriceBand9	PriceBand10
31/12/2024	DUID_BDU1	GEN	ENERGY	\$0.00	\$10.00	...	\$302.98	\$13,398.40
31/12/2024	DUID_BDU1	LOAD	ENERGY	-\$1,000.00	-\$171.65	...	\$60.21	\$299.50
31/12/2024	DUID_BDU1	GEN	RAISEREG	0.00	\$10.00	...	\$30.98	\$348.40
31/12/2024	DUID_BDU1	LOAD	RAISEREG	\$25.00	\$35.65	...	\$160.21	\$299.50
31/12/2024	DUID_BDU1		RAISE6SEC	\$1.00	\$6.65	...	\$50.21	\$299.50

## Band Quantities

TI	Settlement Date	DUID	Direction	BidType	MaxAvail	BandAvail1	BandAvail2	...	BandAvail9	BandAvail10
1	31/12/2024	DUID_BDU1	GEN	ENERGY	250	100	50	...	20	250
1	31/12/2024	DUID_BDU1	LOAD	ENERGY	200	150	20	...	0	0
1	31/12/2024	DUID_BDU1	GEN	RAISEREG	100	100	50	...	20	100
1	31/12/2024	DUID_BDU1	LOAD	RAISEREG	40	5	10	...	0	40
1	31/12/2024	DUID_BDU1		RAISE6SEC	40	25	5	...	0	40

# Notes

- AEMO presented details on development support environment to be made available to participants.
- AEMO noted that issues and queries during the use of the support environment can be raised via [NemReform@aemo.com.au](mailto:NemReform@aemo.com.au).
- In addition, AEMO provided details on the bid structure design.

Raised by	Question/Issue Raised	Response
Carlo Poliseno, AGL	If there is non-compliance on assets, will that affect the pre-registration and registration?	Taken on notice.

## ACTIONS:

- AEMO and AGL to connect to clarify transition arrangements in the case of non-compliance scenario.

# Q&A

Ulrika Lindholm





# Stakeholder questions

Pre-submitted questions	AEMO's initial response
<p>Are currently registered batteries going to be automatically changed over to being an IRP participant or do we need reregister them?</p>	<p>This depends on whether the battery is an <i>Existing IRS participant</i> or a <i>New IRS participant</i>. Existing IRS participants will not be changed over automatically but must apply to register as an IRP as part of the coordinated transition. Please refer to the Transitional arrangements in Section 3 of this pack for further information.</p>
<p>Does this just apply to scheduled assets, or could it apply to batteries under unscheduled/VPPs etc?</p>	<p>IESS June 2024 release applies to batteries that are formally registered with AEMO. Batteries that are participating through a Virtual Power Plant (VPP) would not be covered through these arrangements. Participants should refer to defined terms in <a href="#">IESS Rule</a> (NER 11.145.1) to understand their particular obligations.</p>
<p>Will I be able to test the single DUID / BDU as part of this release?</p>	<p>Yes. AEMO published a draft Industry test and market trial strategy on 22 September which outlines the scope, approach, process, responsibilities and high-level schedule of the industry testing phase for the IESS market transition. For BDUs, the objectives are:</p> <ul style="list-style-type: none"> <li>• Confirm ability for 1 DUID BDU to bid and be dispatched</li> <li>• Confirm existing bidding and dispatch functionality still works for 2 DUID BDU arrangement</li> <li>• Test transition of 2DUID BDU to 1DUID BDU</li> </ul> <p>A final version will be published 17 October. AEMO engage with participants on industry testing through the Industry Testing Working Group. Nominations are welcome through to <a href="mailto:NEMReform@aemo.com.au">NEMReform@aemo.com.au</a>.</p>

# Next steps & Close

Ulrika Lindholm



# Next steps

TIMING	ACTION	RESPONSIBLE
Thu 12 Oct	AEMO to launch Transition survey to Focus Group (day of the session)	AEMO
Late Oct	AEMO to schedule next Focus Group meeting (Mid-Late Nov)	AEMO
Thu 26 Oct	Providing feedback on proposed transition scope and principles, and BDU cutover process.	Focus Group members
Thu 26 Oct	Participants to respond to survey	Focus Group members

# Notes

- AEMO outlined the next steps for participants' reference. AEMO noted that the next focus group will be held by mid-late November and will be scheduled as soon as practicable.

## ACTIONS:

- AEMO to confirm next focus group meeting and issue calendar invite.

# Session close



[iess@aemo.com.au](mailto:iess@aemo.com.au)



[AEMO | IESS Participant toolbox](#)



# APPENDIX A

Glossary



# IESS Glossary

Term	Definition
<b>5MPD</b>	5-minute pre-dispatch
<b>ADC</b>	Aggregated Dispatch Conformance
<b>ADG_ID</b>	Aggregate Dispatch Group identifier for an Aggregate System
<b>AGC</b>	Automatic generation control
<b>ASL</b>	Ancillary service load
<b>ASU</b>	Ancillary service unit
<b>B2B</b>	Business-to-business
<b>B2M</b>	Business-to-market
<b>BDU</b>	Bidirectional unit
<b>BESS</b>	Battery energy storage system
<b>CR</b>	Change request
<b>CRMP</b>	Cost recovery market participant
<b>DRSP</b>	Demand response service provider
<b>DUID</b>	Dispatchable unit identifier
<b>FRMP</b>	Financially responsible market participant
<b>IESS</b>	Integrating Energy Storage Systems rule
<b>IRP</b>	Integrated resource provider

Term	Definition
<b>IRS</b>	Integrated resource system
<b>MSATS</b>	Market settlements and transfer solutions
<b>MSGA</b>	Market small generation aggregator
<b>MT PASA</b>	Medium-term PASA
<b>NCC</b>	NMI classification code
<b>NECR</b>	Non-energy cost recovery
<b>NEM</b>	National electricity market
<b>NEMDE</b>	National electricity market dispatch engine
<b>NMI</b>	National metering identifier
<b>PAE</b>	Profiling and allocation engine
<b>PASA</b>	Projected assessment of system adequacy
<b>PD</b>	Pre-dispatch
<b>PDM</b>	Participant Data Model
<b>PMS</b>	Portfolio management system
<b>SCADA</b>	Supervisory control & data acquisition
<b>SoC</b>	State of charge
<b>UFE</b>	Unaccounted for energy
<b>WDRU</b>	Wholesale demand response unit

# APPENDIX B

BDU Cutover timeline descriptions





# Indicative BDU cutover timeline step descriptions

Step no.	Timing	Day	Step	Responsible party
1.	Prerequisite	< -30	Participant and vendor agree software cutover timeframe prior to starting negotiations with AEMO for BDU cutover.	BESS participant and vendor
2.	Prerequisite	< -30	Negotiate and nominate a cutover date within the transition period with AEMO.	BESS participant with AEMO
3.	Prerequisite	< -30	BESS participant prepares required information for AEMO required to transition BESS to BDU.	BESS participant with AEMO
4.	Prerequisite	< -30	Liaise with AEMO to clarify and provide further information as required.	BESS participant with AEMO
5.	Pre-cutover	-30 minimum	AEMO receives finalised info requiring no further changes by AEMO or BESS participant.	BESS participant
6.	Pre-cutover	-16	The new BDU DUID becomes available in pre-production environment.	AEMO
7.	Pre-cutover	-11	The new BDU becomes available in production environment.	AEMO
8.	Pre-cutover	-9	BESS participant proactively submits bids on load/gen DUIDs (zero availability from cutover until one day after cutover).	BESS participant
9.	Pre-cutover	-9	BESS participant proactively submits bids on new BDU DUID (zero availability until cutover, non-zero availability after cutover).	BESS participant
10.	Pre-cutover	-7	New BDU DUID is seen for the first time in 7-day Pre-dispatch.	BESS participant and AEMO
11.	Pre-cutover	-1	New BDU DUID is seen for the first time in 30-minute Pre-dispatch.	BESS participant and AEMO
12.	Cutover day	0	Old load/gen DUIDs last dispatch in the last interval prior to cutover interval.	BESS participant and AEMO
13.	Cutover day	0	New BDU DUID first dispatch is the cutover interval.	BESS participant and AEMO
14.	Post-cutover	+1	Old load/gen DUIDs are deregistered at midnight the day after cutover day and previously submitted old load/gen bids (step 8) remain unavailable until end of day after cutover day.	AEMO

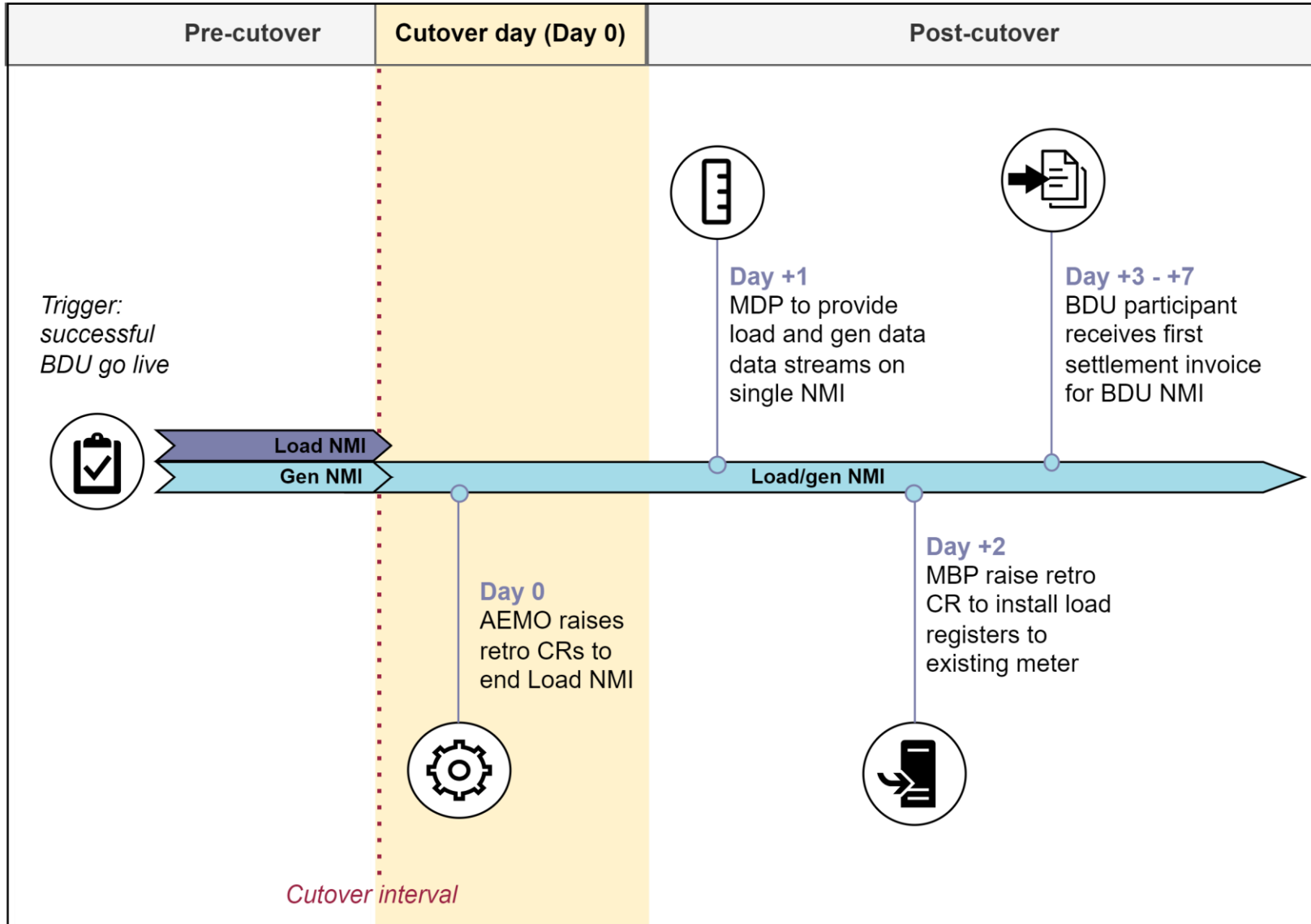
# Indicative BDU cutover timeline

## Process notes:

- Cutover to occur during the transition period: 3 June 2024 - 3 March 2025.
- Days and times depicted are indicative only.
  - First possible instance of Day -16 is 3rd April 2024 (Market Trial start).
  - First possible instance of Day -11 is 3rd June 2024 (Rule effective date).
- Should BESS participants like to take part in Market Trial, the prerequisites listed below must be complete before Market Trial commences 3rd April 2024.
- AEMO must receive all info (i.e., no further changes required by AEMO or participant to data) necessary to transition no later than **30 days** prior to the intended cutover date.
  - Info required will vary per participant and their registration date, details TBC.

# IESS Indicative NMI Cutover Timeline (DRAFT)

This diagram outlines the high-level approach AEMO intends take to cutover existing batteries with separate load and gen NMIs to a single, existing NMI. Cutover to occur in line with the BDU cutover. Days and times depicted are indicative only.



# APPENDIX C

Bid format – Bidirectional Unit



# Bid validation

## BAND PRICES

- Load
  - $\text{PriceBand1} < \text{PriceBand2} < \dots < \text{PriceBand9} < \text{PriceBand10}$
  - Minimum Band1 price =  $\text{MFP} * \text{Load Loss Factor}$
  - Maximum Band10 price =  $\text{MPC} * \text{Load Loss Factor}$
- Generation
  - $\text{PriceBand1} < \text{PriceBand2} < \dots < \text{PriceBand9} < \text{PriceBand10}$
  - Minimum Band1 price =  $\text{MFP} * \text{Gen Loss Factor}$
  - Maximum Band10 price =  $\text{MPC} * \text{Gen Loss Factor}$

## BAND AVAILABILITIES

- Load
  - Band availability for each  $\text{BandAvail1}$  to  $\text{BandAvail10} \leq \text{Registered Load Capacity}$
  - Sum of availabilities  $\text{BandAvail1}$  to  $\text{BandAvail10} \geq \text{Registered Load Capacity}$
- Generation
  - Band availability for each  $\text{BandAvail1}$  to  $\text{BandAvail10} \leq \text{Registered Generation Capacity}$
  - Sum of availabilities  $\text{BandAvail1}$  to  $\text{BandAvail10} \geq \text{Registered Generation Capacity}$

# Bid convexity validation

Bid convexity validation for each trading interval:

- An NER Rule requirement to validate **band prices monotonically increase**
- Prevents the concurrent dispatch of Load and Generation bands
- Load Bands with non-zero availability are validated against Generation Bands with non-zero availability (effective bands)
- "Effective band" refers to non-zero band MW capacity limited by bid MaxAvail
  - Bidding MaxAvail = 0 on Load-side allows the participant to shift band MW capacity into MFP-priced Gen Band 1 without violating the bid convexity rule  
This allows the BDU to compete with other BDU's and Gens at the MFP (and vice versa applies)
- **MLF-adjusted band prices for these effective bands must monotonically increase from Band 1 to Band 10 for both Load and Generator side**
- Load Bands should only have availability in bands priced lower than any of the Generation Bands with availability.

Load	Band1	Band2	Band3	...	Band8	Band9	Band10
Price Band (MLF adj)	-\$1,000.00	-\$500.00	-\$300.00		<b>\$0.00</b>	\$30.00	\$300.00
Band Availability (MW)	20	20	20		<b>20</b>	20	20

Generation	Band1	Band2	Band3	...	Band8	Band9	Band10
Price Band (MLF adj)	-\$962.00	<b>-\$23.99</b>	\$0.01		\$300.01	\$7,500.01	\$15,500.00
Band Availability (MW)	0	<b>50</b>	100		0	0	100

\$ Load < \$ Generation	Band1	Band2	Band3	...	Band8	Band9	Band10
Band1							
Band2	TRUE	TRUE	TRUE		<b>FALSE</b>	<b>FALSE</b>	<b>FALSE</b>
Band3	TRUE	TRUE	TRUE		TRUE	<b>FALSE</b>	<b>FALSE</b>
...							
Band8							
Band9							
Band10	TRUE	TRUE	TRUE		TRUE	TRUE	TRUE

# Regulation FCAS trapezium parameters

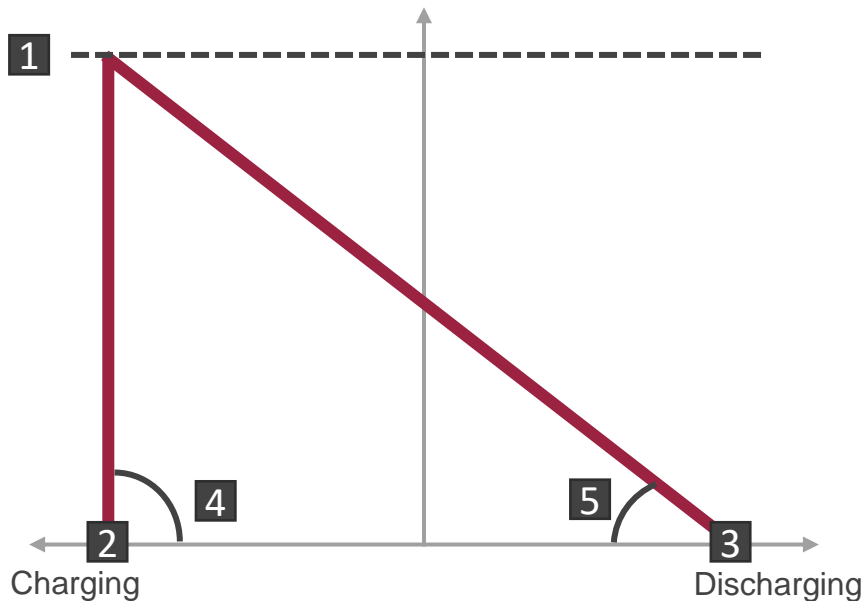
## Registration data (Sch 3.1 Bid Validation Data)

- Maximum Capacity (1)
- Minimum Enablement Level (2)
- Maximum Enablement Level (3)
- Maximum Lower Angle (4)
- Maximum Upper Angle (5)

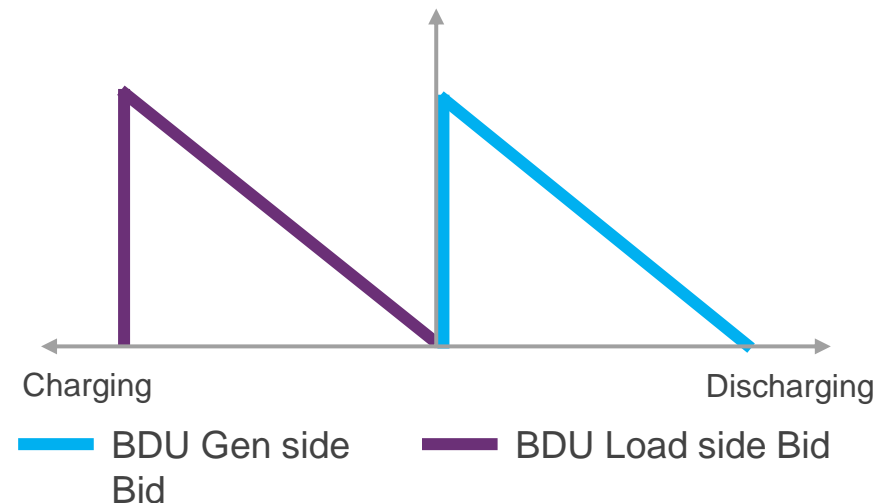
Separate bids for load + gen sides, but bids for both sides must be submitted simultaneously for validation

Load side	Generation side
$\text{MaxAvail}_{\text{Load}}$	$\text{MaxAvail}_{\text{Gen}}$
$\text{EnablementMin}_{\text{Load}}$	$\text{EnablementMin}_{\text{Gen}}$
$\text{EnablementMax}_{\text{Load}}$	$\text{EnablementMax}_{\text{Gen}}$
$\text{LowBreakpoint}_{\text{Load}}$	$\text{LowBreakpoint}_{\text{Gen}}$
$\text{HighBreakpoint}_{\text{Load}}$	$\text{HighBreakpoint}_{\text{Gen}}$

## Conceptual registration trapezium



## Regulation FCAS trapeziums in NEMDE (raise)

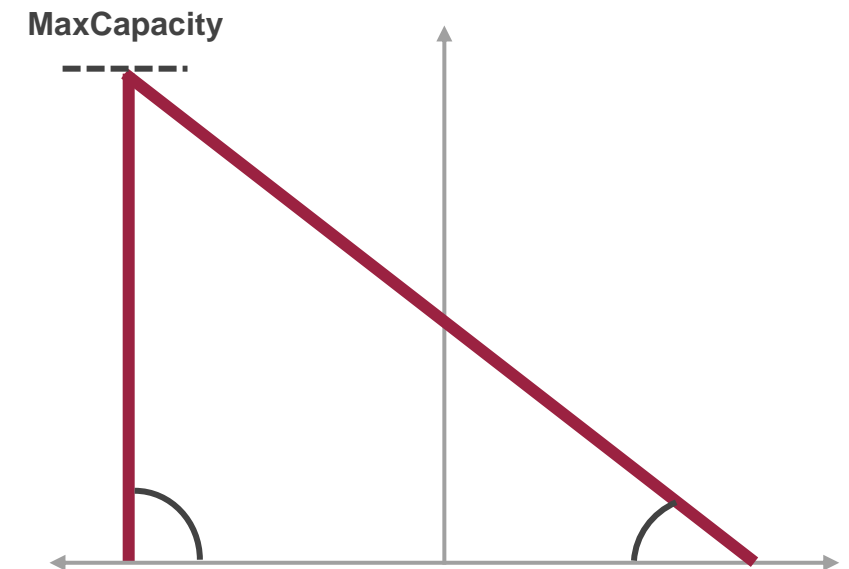
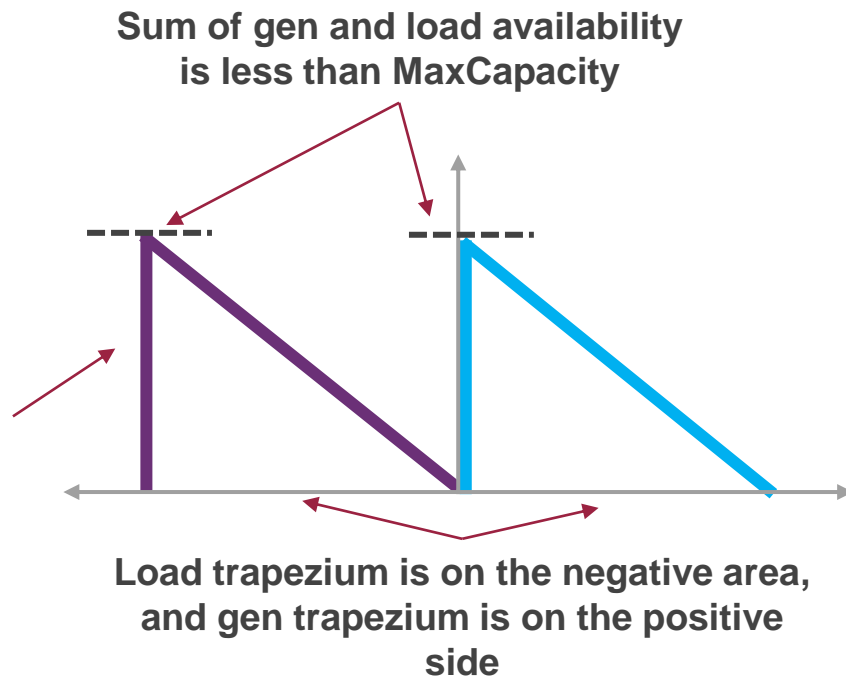


# Validation of regulation FCAS trapeziums (1)

Ensures the trapeziums have a standard shape, and – when combined - are within the registered trapezium.

1. Combined load and generation regulation max availability must not exceed registered regulation max capacity:  
 $MaxAvail_{Load} + MaxAvail_{Gen} \leq MaxCapacity$ .
2. Gen trapezium is defined on the positive side, and load trapezium is defined on the negative side.
3. Trapezium has a 'standard' shape:  $EnablementMin \leq LowBreakpoint \leq High Breakpoint \leq EnablementMax$ .

Parameters define a standard trapezium shape.

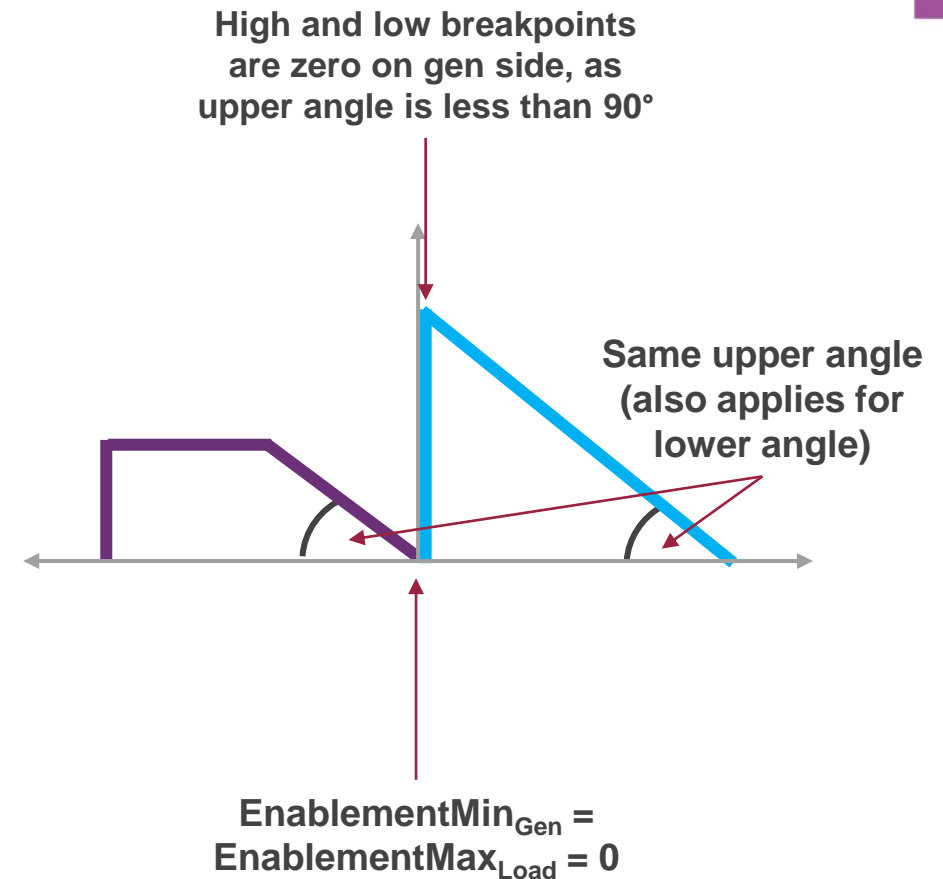




# Validation of regulation FCAS trapeziums (2)

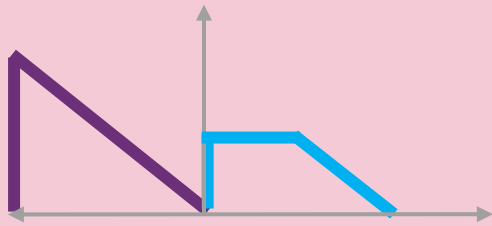
The following apply only if there is bid non-zero regulation max availability on both the load and gen sides:

1. Must be no 'gaps' between trapeziums:
  - $\text{EnablementMin}_{\text{Gen}} = 0$
  - $\text{EnablementMax}_{\text{Load}} = 0$
2. Both trapeziums must have the same upper angle.
3. Both trapeziums must have the same lower angle.
4. If the upper angle is less than  $90^\circ$ , high and low breakpoints on the generation trapezium must be set to zero.
5. Similarly, if the lower angle is less than  $90^\circ$ , high and low breakpoints on the load trapezium must be set to zero.

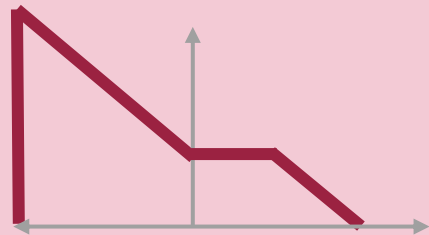


# Examples of invalid regulation trapeziums (1)

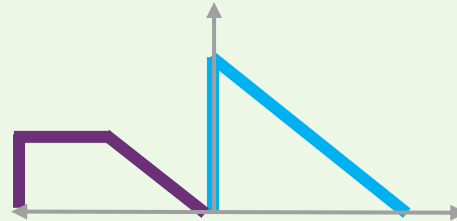
## Invalid trapezium



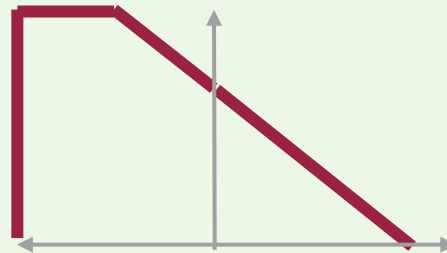
## Combined



## Valid alternative



## Combined

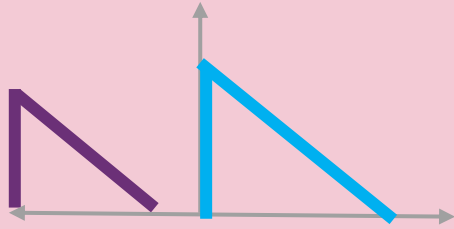


## Explanation

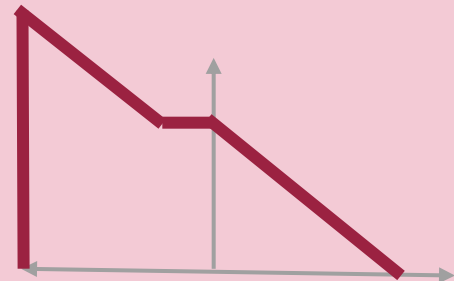
If the upper angle is less than  $90^\circ$ , both the low and high breakpoint on the generation side must be zero.

# Examples of invalid regulation trapeziums (2)

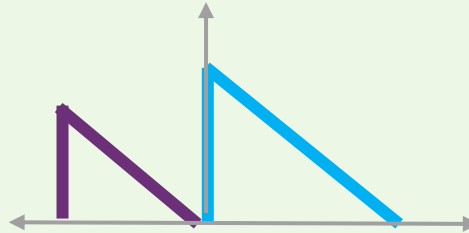
## Invalid trapezium



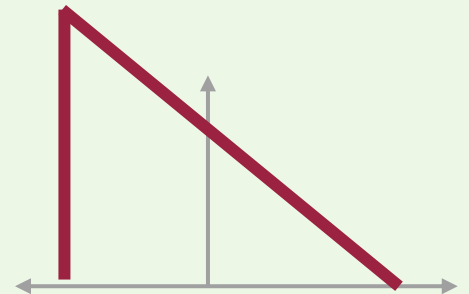
## Combined



## Valid alternative



## Combined



## Explanation

A gap between the trapeziums allows for non-convex solutions.


Resolved by setting  $\text{MaxEnablement}_{\text{Load}} = 0$  (shown) or  $\text{MaxAvail}_{\text{Gen}} = 0$

# APPENDIX D

NEM Reform engagement options and resources



# NEM Reform Program engagement

Forums	Forum focus 	Cadence	Approach
Executive Forum	Program overview and status update	Twice yearly (TBC)	Nomination
Reform Delivery Committee (RDC)	Long term strategic perspective	Quarterly	Nomination
Program Consultative Forum (PCF)	Inflight initiatives status & co-ordination	Monthly	Open
Implementation Forum	Implementation of reforms	Monthly	Open
Electricity Wholesale (EWCF) & Electricity Retail (ERCF) Consultative Forums	Procedures working groups	Monthly	Open
Testing working group	Testing	Monthly	Open
Working groups	Initiatives	As appropriate	As appropriate

## Focus/working Groups for initiatives include:

Initiative focus groups

Strategic and foundational focus groups (IDX/IDAM/PC)



To learn more and get involved, please visit

- [AEMO | NEM Reform Program Stakeholder Engagement](#)
- [AEMO | Industry meeting calendar](#)
- or contact the program at [NEMReform@aemo.com.au](mailto:NEMReform@aemo.com.au).

# Where to access available resources

## Industry readiness & Go-Live

- [IESS June 2024 Readiness approach](#)

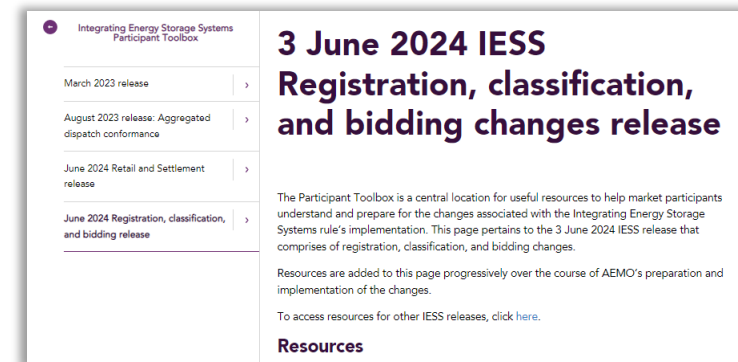
## Technical documentation

- [EMMS Technical Specification - June 2024](#)
- [MSATS Technical Specification - June 2024 v0.01](#)
- [EMMS - Technical Specification - Data Model v5.3](#)

## Industry presentations

- [BDU final design workshop - 24 July 2023](#)

Resources available through IESS Participant Toolbox at AEMO's website



Integrating Energy Storage Systems Participant Toolbox

- March 2023 release >
- August 2023 release: Aggregated dispatch conformance >
- June 2024 Retail and Settlement release >
- June 2024 Registration, classification, and bidding release >

### 3 June 2024 IESS Registration, classification, and bidding changes release

The Participant Toolbox is a central location for useful resources to help market participants understand and prepare for the changes associated with the Integrating Energy Storage Systems rule's implementation. This page pertains to the 3 June 2024 IESS release that comprises of registration, classification, and bidding changes.

Resources are added to this page progressively over the course of AEMO's preparation and implementation of the changes.

To access resources for other IESS releases, [click here](#).

**Resources**

Visit <https://aemo.com.au/initiatives/major-programs/integrating-energy-storage-systems-project/integrating-energy-storage-systems-fags/june-2024-registration-classification-and-bidding-release>

Or contact the project at [IESS@aemo.com.au](mailto:IESS@aemo.com.au)

# APPENDIX E

AEMO Competition Law – Meeting Protocol



# AEMO Competition Law - Meeting Protocol

AEMO is committed to complying with all applicable laws, including the Competition and Consumer Act 2010 (CCA). In any dealings with AEMO, all participants agree to adhere to the CCA at all times and to comply with appropriate protocols where required to do so.

AEMO has developed meeting protocols to support compliance with the CCA in working groups and other forums with energy stakeholders. Before attending, participants should confirm the application of the appropriate meeting protocol.

Please visit: <https://aemo.com.au/en/consultations/industry-forums-and-working-groups>