ST PASA Replacement Technical Workshop 2

27 February 2026

Energy Optimisation

1. Welcome & Objectives

Lenard Bayne

We acknowledge the Traditional Custodians of the land, seas and waters across Australia. We honour the wisdom of Aboriginal and Torres Strait Islander Elders past and present and embrace future generations.

We acknowledge that, wherever we work, we do so on Aboriginal and Torres Strait Islander lands. We pay respect to the world's oldest continuing culture and First Nations peoples' deep and continuing connection to Country, and hope that our work can benefit both people and Country.

'Journey of unity: AEMO's Reconciliation Path' by Lani Balzan

AEMO is proud to have launched its first Reconciliation Action Plan in May 2024. 'Journey of unity: AEMO's Reconciliation Path' was created by Wiradjuri artist Lani Balzan to visually narrate our ongoing journey towards reconciliation – a collaborative endeavour that honours First Nations cultures, fosters mutual understanding, and paves the way for a brighter, more inclusive future.

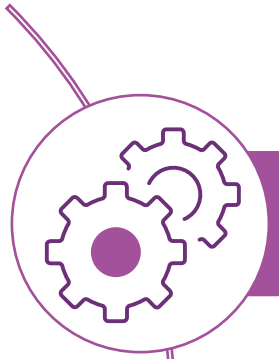
Read our RAP

General Housekeeping

1. Please mute your microphone when not speaking.
2. We look forward to your feedback and questions. Questions are welcome throughout the session, either in the chat or by raising a virtual hand. Alternatively, you can raise your questions during the Q&A.
3. In attending this meeting, you are expected to:
   - Contribute constructively.
   - Be respectful, both on the call and in the chat.

Participants are asked to familiarise themselves with AEMO's Competition Law Meeting Protocol and AEMO's forum expectations as outlined in Appendix A.

Objectives for participants



Overview of energy optimisation and how it impacts the results delivered by the STPASA Replacement engine.

Outline options to manage decommitment of scheduled units in the middle of the day.

Agenda

#	Time (AEDT)	Topic	Presenters
1	10:00am – 10:05am	**Welcome and objectives**	Lenard Bayne
2	10:05am – 10:15am	**Background and context**	Brian Nelson
3	10:15am – 11:00am	**Matters for discussion** • Temporal energy optimisation • Management of decommitments in short term reliability forecasts	Caitlin Aynsley
4	11:00am – 11:20am	**Q&A**	Lenard Bayne
5	11:20am – 11:30am	**Next steps**	Brian Nelson
6		**Workshop Close**	

"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"

Background and context

Brian Nelson

Stakeholder issues to be discussed

This workshop discusses two issues raised in Consultation 1:

Assumptions in relation to battery cycling

- AEMO noted the engine will charge and discharge if needed to minimise shortfalls
- Optimisation is based on bids used in dispatch and energy limits
- There is no specific cycling limit built into bids

Dispatch of scheduled plant to zero MW

- Concerns over whether dispatching to zero may misrepresent reliability issues
- Suggestions provided on managing this issue.
- AEMO noted the GE engine can implement minimum loading levels; this would be assessed by AEMO.

Optimisation in STPASA Replacement Engine under review by AEMO

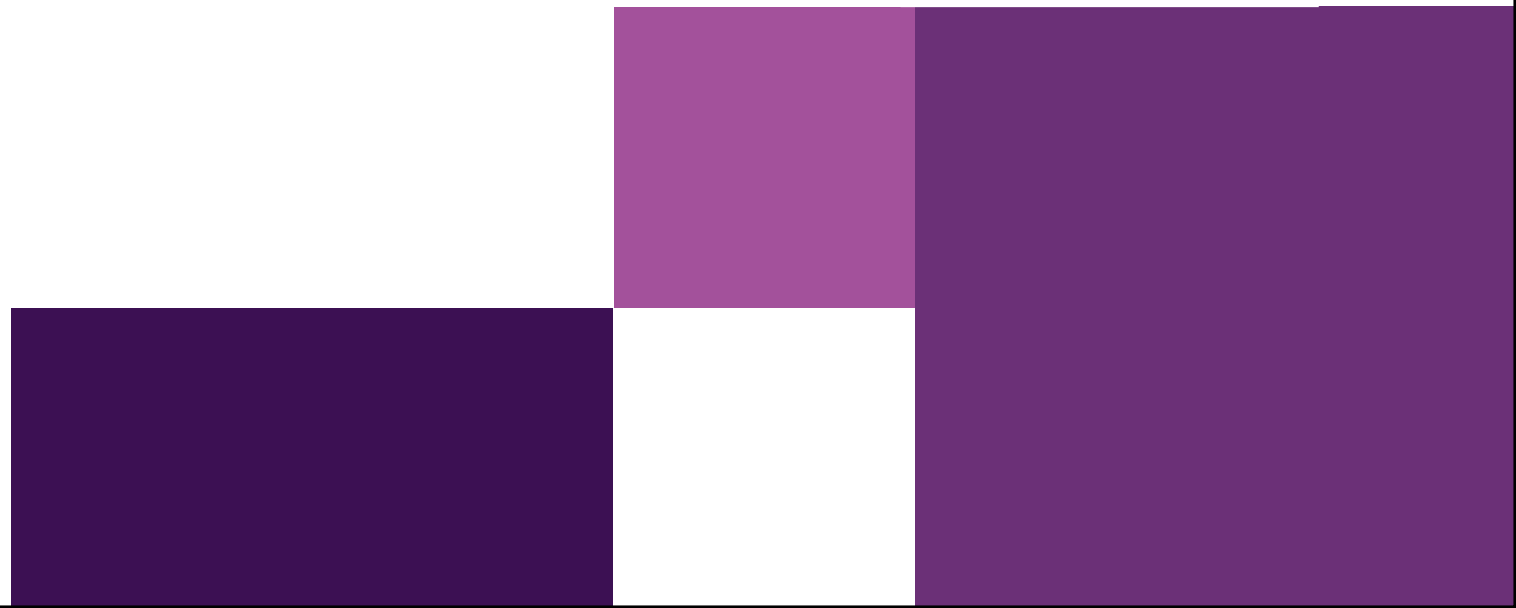
- AEMO is currently reviewing **when** and **how energy optimisation is used** in the STPASA Replacement engine.
- The intention of this workshop is to **explore various applications of energy optimisation** and **how these impact the results** delivered by the STPASA Replacement engine in a **qualitative manner**.
- Advantages and disadvantages of energy optimisation are also provided to industry – **with these currently being considered by AEMO as part of its energy optimisation review**.

2. Matters for discussion

- Temporal energy optimisation
- Management of decommitments in short term reliability forecasts

Temporal energy optimisation

Caitlin Aynsley



What is temporal energy optimisation?

Temporal energy optimisation refers to the **optimal allocation of energy over multiple time periods**.

Temporal energy optimisation allows a forecasting engine to consider the **current** and **future requirements** of the system **simultaneously.**

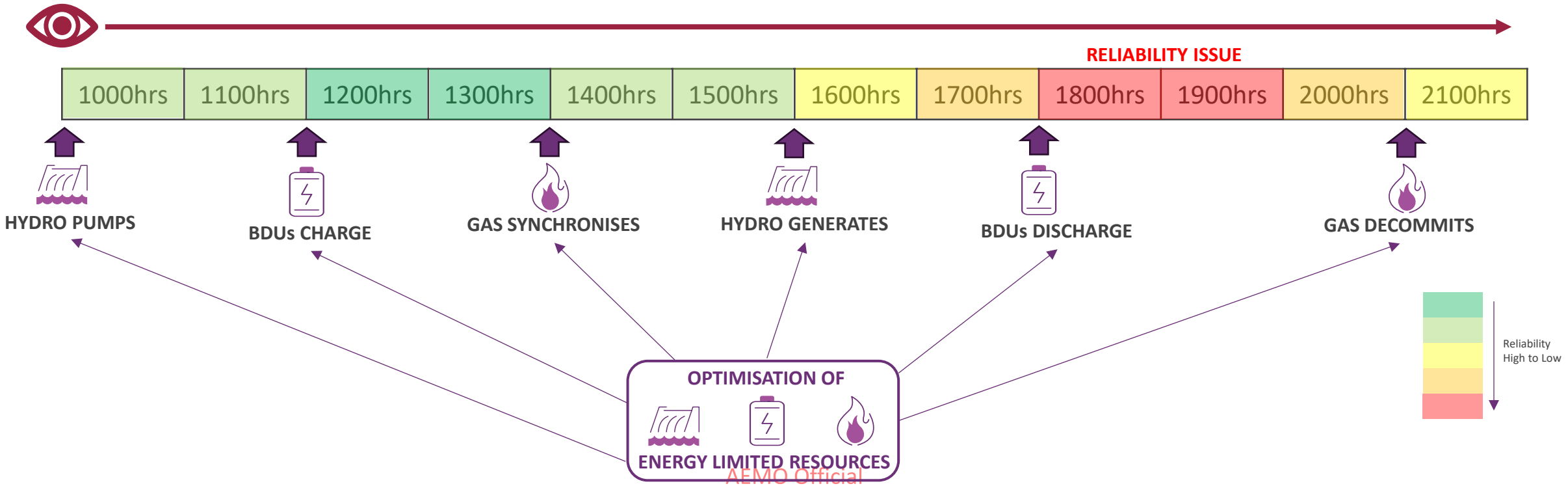
The engine can then **optimise the use of energy limited resources** to address **current** and **future reliability issues**.

Temporal energy optimisation within a day

- The example on the next slide illustrates **how temporal energy optimisation operates within a day**.
- The **evening peak** (1800-2000hrs) is considered **the most challenging period for reliability**.
- Temporal energy optimisation allows a forecasting engine to **identify challenging periods early** and **coordinate energy limited resources** to **optimise reliability over the entire forecasting horizon**.

Temporal energy optimisation within a day

Temporal energy optimisation allows a forecasting engine to **coordinate the use of energy limited resources over the whole day** to **optimise reliability during the most challenging periods of the day.**



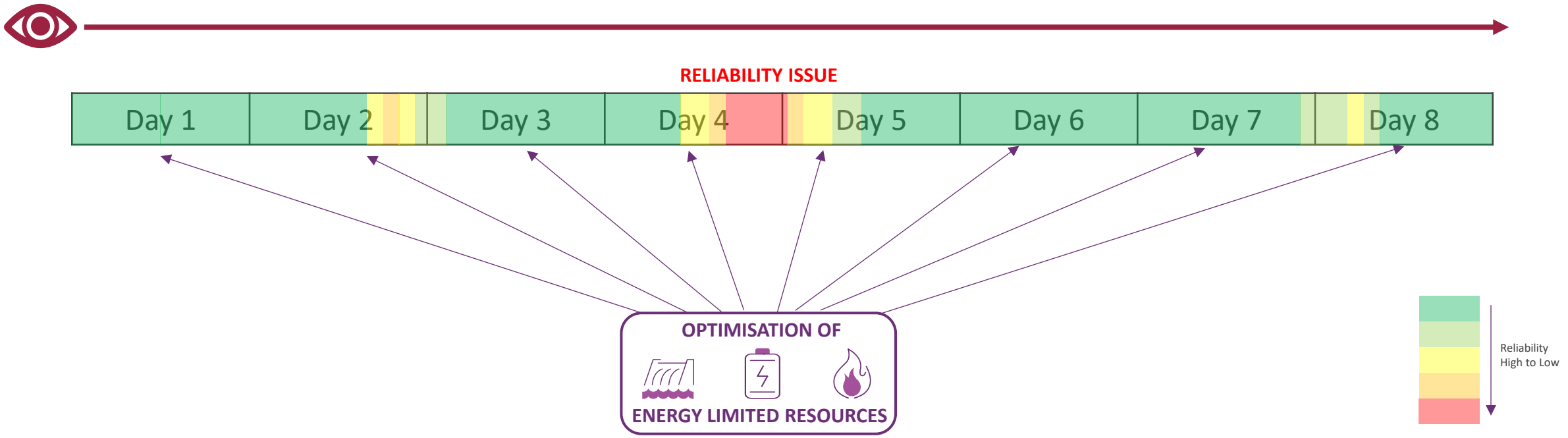
AEMO Official

Temporal energy optimisation within a week

- The example on the next slide illustrates **how temporal energy optimisation operates within a week**.
- **Day 4** is considered **the most challenging period for reliability**, with reliability challenges also expected in the evening on Day 2 and morning of Day 8.
- Temporal energy optimisation allows a forecasting engine to **identify challenging periods early** and **coordinate energy limited resources** to **optimise reliability over the entire forecasting horizon**.

Temporal energy optimisation within a week

Temporal energy optimisation allows a forecasting engine to **coordinate the use of energy limited resources over the whole week** to **optimise reliability during the most challenging periods of the week.**



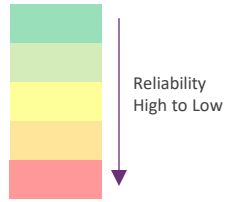
No temporal energy optimisation

- The example on the next slide illustrates **how a forecasting engine behaves with no temporal energy optimisation**.
- Like the first example, the **evening peak** (1800-2000hrs) is considered **the most challenging period for reliability**.
- Without temporal energy optimisation, **the forecasting engine simply solves from interval to interval** – taking outputs from the previous interval to solve the upcoming interval with **no longer term optimisation strategy**.
- The engine has **no opportunity to coordinate energy limited resources** prior to **upcoming periods of challenging reliability**.

No temporal energy optimisation

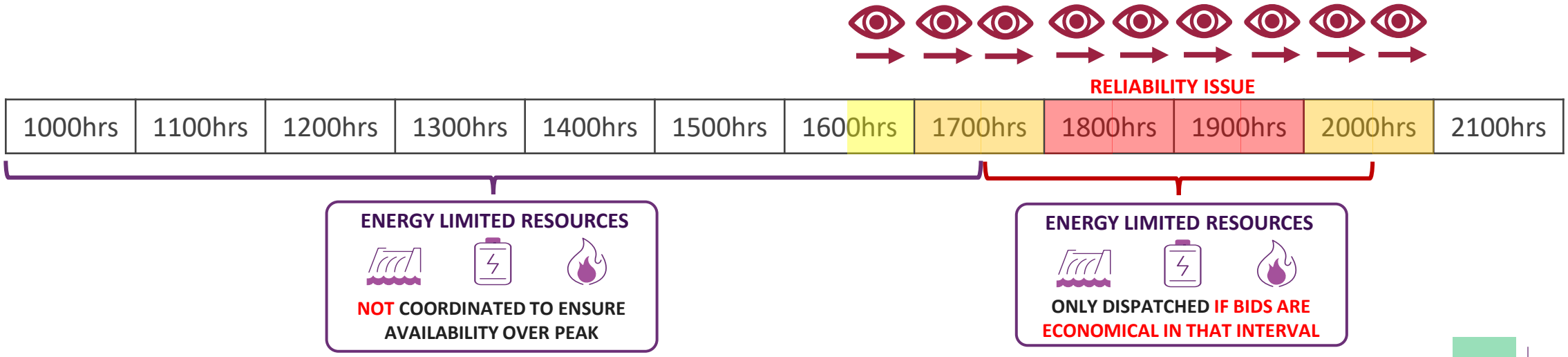
RELIABILITY ISSUE

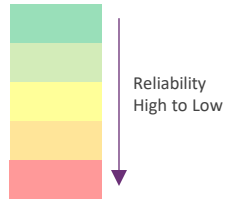
1000hrs	1100hrs	1200hrs	1300hrs	1400hrs	1500hrs	1600hrs	1700hrs	1800hrs	1900hrs	2000hrs	2100hrs



No temporal energy optimisation

The **forecasting engine solves interval by interval** – taking outputs from one interval to solve the next with **no longer term optimisation strategy**.





Approaches to temporal energy optimisation in the NEM

NEM Dispatch	NEM Pre-Dispatch	Existing PDPASA and STPASA
Objective is to **minimise total market costs** in each **5 minute interval.**	Objective is to **minimise total market costs** in each **30 minute interval.**	Objective is to **maximise reliability** of the system **across each trading day**.
No temporal energy optimisation.	**No temporal energy optimisation.**	**Temporal optimisation within each trading day.**
NEMDE solves the current dispatch interval using: - the **current state of the system** - future requirements of the system **for next 5 minutes only**	PD solves the current dispatch interval using: - the **current state of the system** - future requirements of the system **for next 30 minutes only**	PASA solves each trading day using: - **initial conditions** at the start of the trading day - reliability requirements of the system **across that trading day**

AEMO is currently reviewing **when** and **how energy optimisation is used** in the STPASA Replacement engine.

Advantages and Disadvantages

Of temporal energy optimisation in short term reliability forecasting

- Calculates **when energy limited resources** should be used to **optimise system reliability**.
- Calculates **where generation** should be used to **optimise system reliability**.
- Calculates **system reliability** that could be achieved **with optimal use of assets**.
- Results in **less reliability issues forecast** since assets being used optimally.

- **Does not** calculate reliability of the system **based on market outcomes alone**.
- **Difficult to identify when** and **where** optimisations on generation/energy limited resources are performed.
- **High uncertainty at the end of the forecasting horizon gets applied across the whole time horizon** (even at the start of the horizon where uncertainty would be typically low).
- **Large computational cost** and **time required to calculate** when compared to non-temporal optimisation models.

Management of decommitments
in short term reliability forecasts

Treatment of scheduled resources
in short term reliability forecasts

- By default, the **STPASA Replacement Engine will have the ability to decommit uneconomic generation** in the middle of the day and **recommit these units** over peak to improve reliability if required.

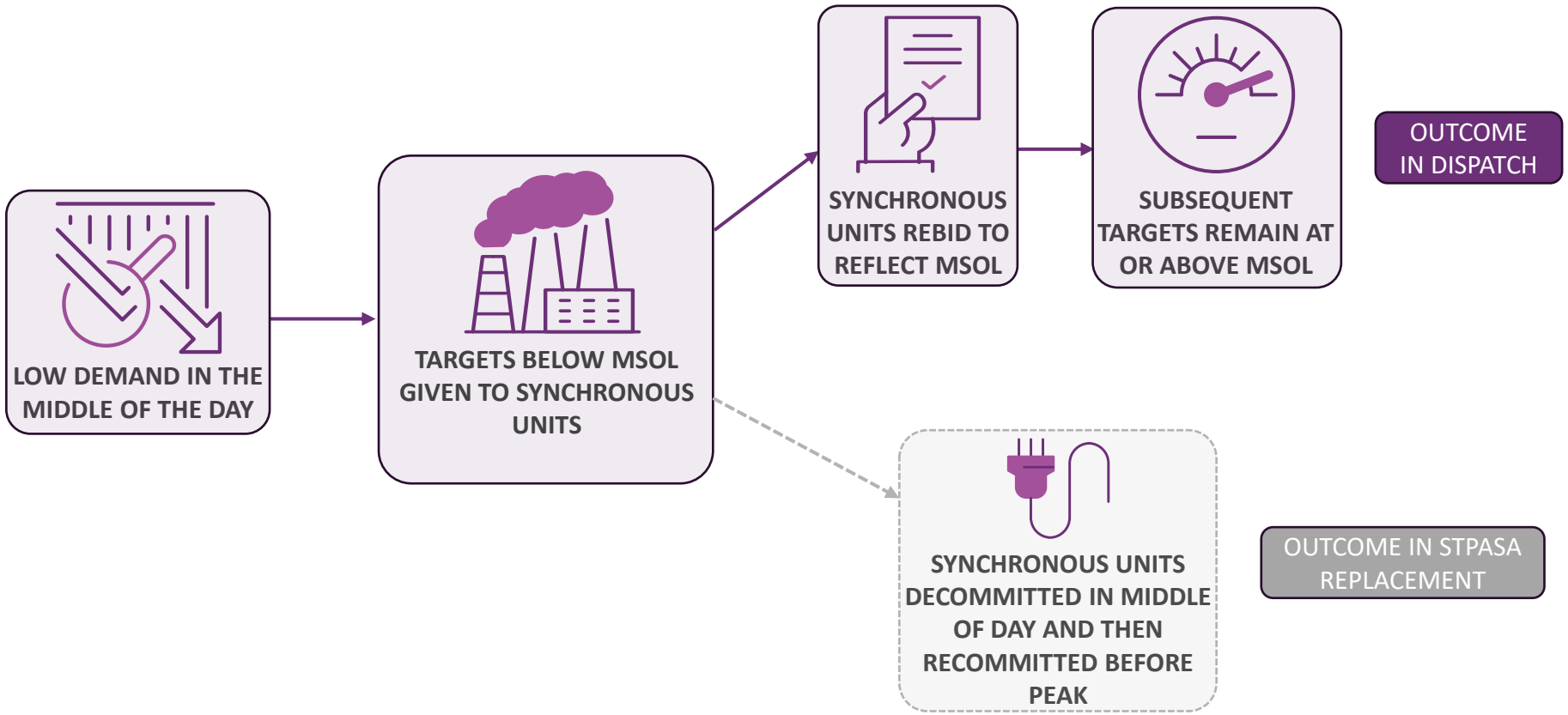
- This functionality uses **assumed decommitment and return to service times** for slow start synchronous units.

- **Decommitment in the middle of the day does not reflect expected behaviour** of these units who typically **reflect their Minimum Safe Operating Level (MSOL) in bids** to prevent unplanned decommitment.

Outcomes for scheduled resources

Dispatch vs STPASA Replacement

Minimum safe operating level (MSOL) is the **MW level below which a generating unit would become unstable**, after other technical responses have been exhausted (for example, auxiliary firing).



AEMO options to reflect MSOLs in STPASA Replacement Engine

Implement MSOL Constraints in engine

LHS	Operator	RHS
1 x COAL1	≥	140MW
1 x COAL2	≥	185MW
1 x COGEN1	≥	70MW
1 x COGEN2	≥	80MW
1 x GAS1	≥	40MW

Reflect MSOL in engine settings

DUID	EcoMin
COAL1	140MW
COAL2	185MW
COGEN1	70MW
COGEN2	80MW
GAS1	40MW

AEMO is **testing these options** before deciding **whether to apply them** in the final release.

Advantages and Disadvantages

Of reflecting MSOLs in short term reliability forecasting

- **Reflects expected behaviour in dispatch** – scheduled units rebid to stay online during day.
- **Prevents STPASA from making incorrect assumptions** on commitment times.

- **Uses hardcoded assumptions on MSOL** which may not be applicable on that day.
- Requires the **creation and management** of additional **generator constraints.**

4. Q & A

Lenard Bayne

4. Next steps

Brian Nelson

AEMO Official

Next steps for Consultation 2

Stage	Date	Responsible
~~Consultation workshop 1~~	~~17 December 2025~~	~~AEMO~~
~~Early feedback on PASA reporting changes~~	~~15 January 2026~~	~~Participants~~
~~Publish consultation paper~~	~~Mid January 2026~~	~~AEMO~~
~~Feedback period on consultation paper closes~~	~~10 February 2026~~	~~AEMO~~
Consultation workshop 2 – energy optimisation	27 February 2026	AEMO
Consultation workshop 3 – forecasting	March/April (TBC)	AEMO
Draft report published, including draft Procedure	Early April	AEMO
Feedback period on draft report closes	(20 business days)	Participants
Final report and updated Procedures published	Early July	AEMO

AEMO invites participation in the ongoing consultation and workshops.

- Your feedback is essential, please provide your feedback via NEMReform@aemo.com.au within the timeframes indicated above.
- Feedback will inform the draft report where appropriate.

Implementation & Industry readiness

- AEMO has incorporated the remaining aspects of the ST PASA Replacement into the NEM Reform Implementation Roadmap and NEM Reform Program collaboration, allowing market participants to gain a comprehensive view of industry changes.
- AEMO continues to work on providing the industry with updated delivery schedules and readiness strategies for this initiative as part of the ongoing NEM Reform collaboration.

NEM Reform Program - How to get involved

Forums	Forum focus	Cadence	Approach
Executive Forum	Program overview and status update	3 per Year	Nomination
Reform Delivery Committee (RDC)	Long term implementation planning	3-4 per Year	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
Industry Testing Working Group	Testing	Monthly	Open
Working Groups	Inflight	As appropriate	As appropriate

Focus / working groups for inflight initiatives include:

- Market Integration Technology Enhancement WG (IDX/IDAM/PC)
- Improving Security Frameworks TNSP WG

To learn more, please visit:

- AEMO | NEM Reform Program Forums
- AEMO | NEM Reform Program Initiatives
- AEMO | Industry Meetings Calendar
- Subscribe to the NEM Reform Newsletter here or contact the program at NEMReform@aemo.com.au.

AEMO Official

5. Workshop Close

AEMO Official

Appendix A: Competition law meeting protocol and AEMO forum expectations

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 regarding proposed reforms or other initiatives, all participants agree to adhere to the CCA at all times and to comply with this Protocol. Participants must arrange for their representatives to be briefed on competition law risks and obligations.

Participants in AEMO discussions **must**:

- Ensure that discussions are limited to the matters contemplated by the agenda for the discussion
- Make independent and unilateral decisions about their commercial positions and approach in relation to the matters under discussion with AEMO
- Immediately and clearly raise an objection with AEMO or the Chair of the meeting if a matter is discussed that the participant is concerned may give rise to competition law risks or a breach of this Protocol

Participants in AEMO meetings **must not** discuss or agree on the following topics:

- Which customers they will supply or market to
- The price or other terms at which Participants will supply
- Bids or tenders, including the nature of a bid that a Participant intends to make or whether the Participant will participate in the bid
- Which suppliers Participants will acquire from (or the price or other terms on which they acquire goods or services)
- Refusing to supply a person or company access to any products, services or inputs they require

Under no circumstances must Participants share Competitively Sensitive Information. Competitively Sensitive Information means confidential information relating to a Participant which if disclosed to a competitor could affect its current or future commercial strategies, such as pricing information, customer terms and conditions, supply terms and conditions, sales, marketing or procurement strategies, product development, margins, costs, capacity or production planning.

AEMO Forum and Meeting Expectations

This charter explains expectations regarding participation and behavior in the Australian Energy Market Operator (AEMO)'s stakeholder forums.

Meeting Expectations

All participants will:

- Respect the diversity of the group.
- Speak one at a time – refrain from interrupting others.
- Share the oxygen – ensure that all attendees who wish to have an opportunity to speak are afforded a chance to do so.
- Maintain a respectful stance towards all participants.
- Listen to others' points of view and try to understand others' interests.
- Share information openly, promptly, and respectfully.
- If requested to do so, hold questions to the end of each presentation.
- Remain flexible and open-minded and actively listen and participate in meetings.
- Abide by COVID-Safe workplace guidelines, if attending a meeting on AEMO's premises.

Roles and Responsibilities

Forum stakeholders agree to:

- Be specific and fact-based in their feedback on a specific workstream or emerging issue;
- Review and provide feedback on papers and reports;
- Relay information to their colleagues or constituents after each meeting and gather information/feedback from their colleagues or constituents, as practicable, before each meeting;
- Maintain a focus on solutions or outcomes that benefit all energy consumers.

AEMO agrees to:

- Provide technical expertise in a manner that is considerate of the audience and their level of expertise;
- Assist participants in understanding issues enough to represent their views;
- Provide all participants the opportunity to voice their views.

AEMO

AUSTRALIAN ENERGY MARKET OPERATOR

For more information visit

aemo.com.au