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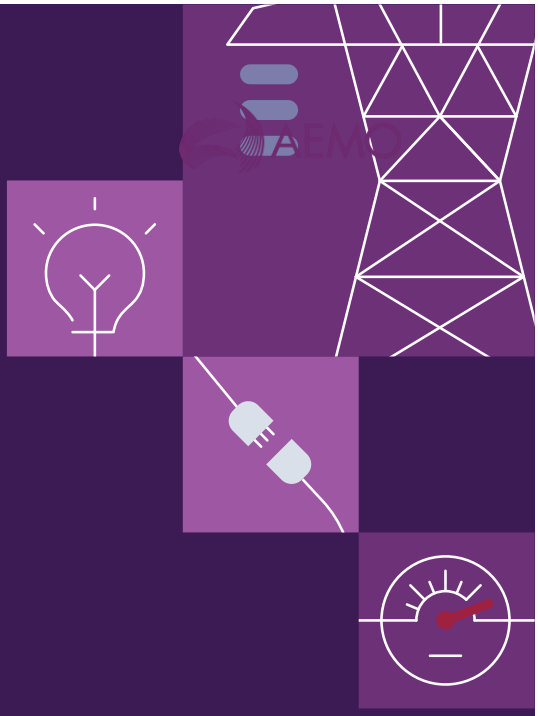

ST PASA Procedure and related douments

Draft Report – Standard consultation for the National Electricity Market

Published: 28 October 2024

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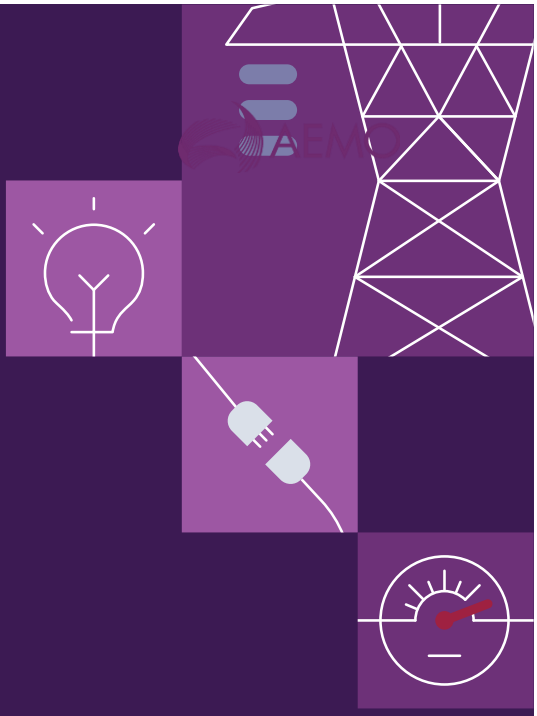

Executive summary and consultation notice

The publication of this draft report commences the second stage of the standard consultation procedure conducted by AEMO to consider proposed procedures for the Short Term Projected Assessment of System Adequacy (ST PASA) process (**Procedures**) and amendments to related documents (the **proposal**) under the National Electricity Rules (**NER**).

This consultation is undertaken as required by NER 11.149.1, following the procedure in NER 8.9.2.

The *National Electricity Amendment (Updating Short Term PASA) Rule 2022*[1] (**Amending Rule**) requires AEMO to develop and publish the Procedures in accordance with NER 3.7.3 as in force from 31 July 2025, when Schedule 1 of the Amending Rule commences (**new NER 3.7.3**).

The Amending Rule will introduce a principles-based framework, linked to a PASA objective, to guide AEMO's administration of ST PASA. Other changes introduced by the Amending Rule include a requirement for AEMO to publish availability information for individual scheduled resources, and amended definitions of PASA availability and energy constraints.

AEMO has developed the initial Procedures to broadly reflect the content covered by the existing Short Term PASA Process Description[2], updated to address the information requirements of new NER 3.7.3. Submissions received from the initial consultation suggested some ideas that AEMO has considered improve transparency of ST PASA process, and some issues that were out of scope for this consultation.

AEMO has responded to these ideas and issues in the summary table in Appendix B, and included the following key points into the draft Procedure:

- Clarification of treatment of energy storage systems and loads; and
- Generator recall information.

AEMO's draft proposal is to make the ST PASA Procedures in the form published with this draft report, with a proposed effective date of **31 July 2025.**

This consultation also covers minor consequential amendments to the Reliability Standard Implementation Guideline (**RSIG**), the Spot Market Operations Timetable, and SO_OP_3703: Short Term Reserve Management, with a proposed effective date of **31 July 2025**.

Consultation notice

AEMO invites written submissions from interested persons on the draft proposal and issues identified in this draft report to NEMReform@aemo.com.au by 5:00pm (Melbourne time) on **Monday 2 December 2024.**

Submissions may make alternative or additional proposals you consider may better meet the objectives of this consultation and the national electricity objective in section 7 of the National Electricity Law. Please include supporting reasons.

[1] The Amending Rule as made and all AEMC consultation materials are available on the AEMC's website at https://www.aemc.gov.au/rule-changes/updating-short-term-pasa.

[2] AEMO, Short Term PASA Process Description, 21 June 2016, at https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-reliability/projected-assessment-of-system-adequacy.

Before making a submission, please read and take note of AEMO's consultation submission guidelines, which can be found at https://aemo.com.au/consultations. Subject to those guidelines, submissions will be published on AEMO's website.

Please identify any parts of your submission that you wish to remain confidential, and explain why. AEMO may still publish that information if it does not consider it to be confidential, but will consult with you before doing so. Material identified as confidential may be given less weight in the decision-making process than material that is published.

Submissions received after the closing date and time will not be valid, and AEMO is not obliged to consider them. Any late submissions should explain the reason for lateness and the detriment to you if AEMO does not consider your submission.

Interested persons can request a meeting with AEMO to discuss any particularly complex, sensitive or confidential matters relating to the proposal. Please refer to NER 8.9.1(k). Meeting requests must be received by the end of the submission period and include reasons for the request. AEMO will try to accommodate reasonable meeting requests but, where appropriate, we may hold joint meetings with other stakeholders or convene a meeting with a broader industry group. Subject to confidentiality restrictions, AEMO will publish a summary of matters discussed at stakeholder meetings.

Contents

Tables

1. Stakeholder consultation process

As required by National Electricity Rules (**NER**) 11.149.1, AEMO is consulting on Short Term Projected Assessment of System Adequacy (**ST PASA**) Procedures and related documents (the **proposal**) in accordance with the standard rules consultation procedure in NER 8.9.2. The proposal will take effect from 31 July 2025 in accordance with the *National Electricity Amendment (Updating Short Term PASA) Rule 2022*[3] (**Amending Rule**). Consultation on the proposal will be conducted in accordance with the standard rules consultation procedure in NER 8.9.2.

The proposal also covers consequential changes to the following documents, which are required as a result of the Amending Rule:

- Reliability standard implementation guidelines (**RSIG**).
- SO_OP_3703: Short term reserve management.
- Spot market operations timetable.

Note that this document uses terms defined in the NER, which are intended to have the same meanings. There is a glossary of additional terms and abbreviations in Appendix A.

AEMO's indicative process and timeline for this consultation are outlined below. Future dates may be adjusted and additional steps may be included if necessary, as the consultation progresses.

Consultation steps	Dates
Generator recall workshop	4 July 2024 (completed)
Feedback from stakeholders on generator recall workshop	19 July 2024 (completed)
Procedure consultation workshop	24 July 2024 (completed)
Feedback from stakeholders on Procedure consultation workshop	9 August 2024 (completed)
Consultation paper published	3 September 2024 (completed)
Submissions due on consultation paper	1 October 2024 (completed)
Draft report published, including draft Procedures and marked up consequential amendments to other impacted documents	28 October 2024 (completed with this publication)
Submissions due on draft report	2 December 2024
Final report and documents published	10 February 2025

AEMO's consultation webpage for the proposal is at https://www.aemo.com.au/consultations/current-and-closed-consultations/st-pasa-procedures-and-related-documents-consultation, containing all previous published papers and reports, written submissions, and other consultation documents or reference material.

In response to its consultation paper on the proposal, AEMO received **five** written submissions. Stakeholder feedback from the procedure consultation workshop is summarised in Appendix C.

AEMO thanks all stakeholders for their feedback on the proposal to date, which has been considered in preparing this draft report, and looks forward to further constructive engagement.

[3] See https://www.aemc.gov.au/rule-changes/updating-short-term-pasa.

2. Background

2.1. Context for this consultation

The Australian Energy Market Commission (**AEMC**) made the Amending Rule in May 2022. From 31 July 2025, the Amending Rule will replace the existing short term PASA framework in the NER with a principles-based framework. It will also revise the definitions of 'energy constraint' and 'PASA availability', which relate to some of the information provided by market participants as inputs to the short term PASA.

The Amending Rule requires AEMO to develop and publish the Procedures by 30 April 2025[4].

This draft report sets out AEMO's draft Procedures, in accordance with NER 3.7.3 as replaced by the Amending Rule (**new NER 3.7.3**). Included with the draft Procedures are minor amendments that will be required for three other AEMO published documents as a result of the Amending Rule.

2.2. NER requirements

The NER[5] require AEMO to prepare and publish the PASA in two time frames:

- short term (ST) PASA covers six trading days from end of the trading day covered by most recent pre-dispatch schedule with a half hourly resolution; and
- medium term (MT) PASA covers 24 months from the Sunday after the day of publication with a daily resolution.

For ST PASA, AEMO uses the inputs from registered participants and information produced by its own systems to forecast reliability and security conditions up to seven days ahead of real time. The Amending Rule provides a certain amount of flexibility to redevelop and update the information in the ST PASA in a way that best meets the 'PASA objective' in NER 3.7.1(b):

> *The PASA is a comprehensive program of information collection, analysis and disclosure of medium term and short term system security and reliability of supply prospects so that Registered Participants are properly informed to enable them to make decisions about supply, demand and outages of transmission networks in respect of periods up to 2 years in advance (or up to 3 years in advance, where specified).*

As outlined in the Consultation Paper[6], the draft Procedures are to include the elements described in new NER 3.7.3(c).

[4] NER 11.149.1

[5] NER 3.7.2 and 3.7.3

[6] See https://www.aemo.com.au/consultations/current-and-closed-consultations/st-pasa-procedures-and-related-documents-consultation.

2.3. The national electricity objective

Within the specific requirements of the NER applicable to this proposal, AEMO will seek to make a determination that is consistent with the national electricity objective (**NEO**) and, where considering options, to select the one best aligned with the NEO.

The NEO is expressed in section 7 of the National Electricity Law as:

> *to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity with respect to:*
>
> *(a) price, quality, safety, reliability and security of supply of electricity; and*
>
> *(b) the reliability, safety and security of the national electricity system; and*
>
> *(c) the achievement of targets set by a participating jurisdiction—*
>
> *(i) for reducing Australia's greenhouse gas emissions; or*
>
> *(ii) that are likely to contribute to reducing Australia's greenhouse gas emissions.*

3. List of material issues

The key material issues arising from the proposal or raised in submissions or consultation meetings are listed in Table 1.

Table 1 List of material issues

No.	Issue	Raised by
1.	Clarification of treatment of energy storage systems and loads	EnergyAustralia Origin Snowy Hydro Stanwell Shell
2.	Generator recall information	Origin Snowy Hydro Mercuria

A detailed table of issues raised by stakeholders in written submissions[7] to the consultation paper, with AEMO's responses, is in Appendix B.

Each of the material issues in Table 1 is discussed in Section 4.

Other issues, including issues that are out of scope for this consultation and are to be considered as part of the ST PASA Replacement Project procedures, are discussed in Section 5.

[7] See https://www.aemo.com.au/consultations/current-and-closed-consultations/st-pasa-procedures-and-related-documents-consultation.

4. Discussion of material issues

4.1. Clarification of treatment of energy storage systems and loads

4.1.1. Issue summary and submissions

This issue relates to:

- battery cycling[8], specifically for batteries that have warranty limits relating to the number of times they can be cycled. This includes how participants can reflect these limits in PASA submissions;
- greater clarity around how a bidirectional unit's (**BDU**'s) bid available capacity would see it fully discharge if a specific price level is reached. This is to include how it would be assessed as available to discharge in the reliability assessment; and
- publishing energy per interval, split by shorter-duration BDU and longer-duration energy-limited scheduled generators. This includes to inform participants where their contribution can provide the greatest benefit to the system.

Origin's submission suggested that it would be beneficial for AEMO to outline any assumptions that will be made in relation to battery cycling into the ST PASA Procedure, and where batteries that have warranty limits relating to the number of times they can be cycled, how participants can reflect these limits in PASA submissions.

Shell Energy suggested greater clarity be provided in the ST PASA Procedure around how a BDU's bid available capacity would see it fully discharge if a specific price level is reached, including how it would be assessed as available to discharge in the reliability assessment.

Shell Energy recommends that the Pre-dispatch and ST PASA reliability assessment output files should contain additional availability, PASA availability and Unconstrained Intermittent Generation Forecast (UIGF) information on an individual Dispatchable Unit Identifier (DUID) basis. Shell also stated that semi-scheduled generators currently submit maximum availability and PASA availability values and recommended that these values should be transparent on the same basis as it is for scheduled resources.

4.1.2. AEMO's assessment

AEMO notes that for battery cycling, the current ST PASA does not have the capability to model battery cycling and will continue to use daily energy limits as for other energy limited plant. The Draft Procedure will include modelling assumptions for battery storage. Submissions that contemplate prices and battery cycling may be considered as part of future consultations, as even though PASA does not consider dispatch or prices, these issues may be considered as part of the ST PASA Replacement Project.

In regards to how a BDU's bid available capacity would be reached, the availability information used by PASA is provided through the spot market bidding process. AEMO will review how it is drafted in the Draft Procedure and clarified where necessary.

[8] In PASA, cycling refers to charging and discharging the bettery within the seven-day outlook to optimise reserves. The current ST PASA will only discharge a battery using its daily energy limit. The ST PASA Replacement Project will look to include charging as well.

AEMO notes that maximum availability for semi-scheduled generation is based on either the unconstrained intermittent generation forecast or bid availabity if the unit is self-forecasting. AEMO will be publishing this data as part of this consultation. PASA availability is not collected for semi-scheduled generation.

The Draft Procedure include modelling assumptions for BDUs and other energy storage systems, and for other dispatchable units under the current ST PASA.

4.1.3. AEMO's conclusion

This has been reviewed through the drafting of the Draft Procedure and clarified where necessary.

4.2. Generator recall information

4.2.1. Issue summary and submissions

Snowy Hydro raised the issue of removing the specification of a 24-hour recall period, which they stated could become a compliance burden for market participants as it increases reporting requirements. Snowy Hydro suggested specifying two to three bands (from 0-8 hrs, >8-24 hrs, >24-168 hrs) using recallable megawatts (MW) units rather than hours.

Snowy Hydro requested AEMO provide additional guidance on expectations of participants to report unit recall times which are less than one hour. The issue is that recall times cannot be reported in minutes or have decimals, rather they need to be in whole hours.

The issue is about understanding the ST PASA requirements for load and storage assets during lack of reserve (**LOR**) events. As described in the submission from Stanwell, reliability risk will also change to account for deficiencies in energy supply as more renewables enter the market, because of shortfalls associated with unplanned weather events. While additional storage and load will be needed, it is unclear how bidding in capacity during LOR events will impact storage and load assets.

AEMO raised in its Consultation Paper[9] whether the proposed 168-hour maximum recall period is appropriate for PASA availability, or should it be longer or shorter. Stakeholders did not provide feedback directly on this question.

4.2.2. AEMO's assessment

AEMO considers that Snowy Hydro's assessment of additional burden has merit, however it would not be able to be implemented in time for commencement of the Rule on 31 July 2025. AEMO will consider how the option to specify bands of recallable MW capacity can be captured within the ST PASA Replacement Project.

4.2.3. AEMO's conclusion

AEMO has included in the Draft Procedure the assumptions that AEMO makes for ST PASA requirement.

[9] See https://www.aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2024/st-pasa-procedures-and-related-documents/consultation-paper---st-pasa-procedure-final.pdf?la=en.

AEMO considers the issue raised by Snowy Hydro has merit, however it would require additional time to implement, and is currently out of scope for this consultation.

AEMO's solution is for market participants to submit one value in hours. AEMO has concluded that the proposed 168 hour maximum is sufficient, however AEMO has left the possibility for longer values to be submitted into the portal.

5. Other matters

In AEMO's Consultation Paper, AEMO included matters that had been raised by participants in summary table Appendix C.

Table 2 Matters raised from initial Consultation Paper

No.	Issue	Raised by	Included in Draft Procedure
1.	Publication of unit-level availabilities for all plant	Energy Australia	Yes
2.	Methodology around BDUs and Other Plant, including clarity around loads by BDUs and pumped storage.	Shell Energy	Yes
3.	Explain the limitations of the PASA model to use BDU energy limits especially beyond the pre-dispatch period.	Shell Energy	Yes
4.	Interconnector limits and Allocation of energy limits to half hour periods	Shell Energy	Yes
5.	Pre-dispatch (PD) PASA timeframe the Daily Energy Constrained Availability for BDU	AGL	Yes
6.	Explain how BDUs are modelled in ST PASA	Energy Australia	Yes
7.	168-hour maximum recall period appropriate for PASA availability	AEMO	Yes

For more information, refer Appendix C in ST PASA Procedures and related documents Consultation Paper[10].

5.1. Subsequent changes – MT PASA

In AEMO's previous consultation on the RSIG[11], ENGIE and Shell Energy both suggested the 24-hour recall period used to define PASA availability is too rigid, and that it should be extended to 72 hours. AEMO accepted that 72 hour recall is a valid recall period for longer-term planning including the EAAP and ESOO.

Under the amended definition of "PASA availability" in the Amending Rule, AEMO may determine the recall period in the RSIG. As such, AEMO has outlined in the RSIG that the availabilities submitted represent the production capacity that could be made available within 72 hours.

[10] At https://www.aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2024/st-pasa-procedures-and-related-documents/consultation-paper---st-pasa-procedure-final.pdf?la=en.

[11] Refer, https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2023/reliability-forecasting-guidelines-and-methodology-consultation/reliability-forecasting-guidelines-and-methodologies-consultation-draft-report.pdf?la=en

6. Draft determination on proposal

Having considered the matters raised in submissions to the consultation paper, AEMO's draft determination is to make the ST PASA Procedure in the form published with this draft report and amend related documents which are marked up and published with this draft report.

As stated in Section 2.3, AEMO has sought to make a determination that is consistent with the national electricity objective (NEO) and considers how the ST PASA contributes to the efficient operation and use of energy and capacity services with respect to reliability and security of supply of electricity, and the reliability and security of the national electricity system.

Effective date

The effective date for this Procedure is 31 July 2025. AEMO is expecting that the final version will be published around 10 February 2025. This is ahead of the rule obligation date of 30 April 2025 to give industry additional time for implementation.

Appendix A. Glossary

Term or acronym	Meaning
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator Limited
Amending Rule	*National Electricity Amendment (Updating short term PASA) Rule 2022*
BDU	Bidirectional unit
DUID	Dispatchable unit identifier
FUM	Forecast uncertainty measure
HH	A 30 minute period ending on the hour and each continuous period of 5 minutes thereafter and, Half-hour (30-minute period)where identified by a time, means the 30 minute period ending at that time.
LOR	Lack of reserve
LRC	Low reserve condition
NEO	National Electricity Objective
NER	National Electricity Rules[12]
PD PASA	Pre-dispatch projected assessment of system adequacy
RSIG	Reliability standard implementation guidelines
ST PASA	Short term projected assessment of system adequacy

[12] NER followed by a number refers to a rule or clause of the National Electricity Rules

Appendix B. List of Submissions and AEMO Responses

No.	Stakeholder	Issue	AEMO response
1	Origin	**Battery cycling** Beneficial for AEMO to outline any assumptions that will be made in relation to battery cycling; and for batteries that have warranty limits relating to the number of times they can be cycled, how participants can reflect these limits in PASA submissions.	Noted. The current ST PASA does not have the capability to model battery cycling and will continue to use daily energy limits as for other energy limited plant. The procedure will include modelling assumptions for battery storage.
2	Origin	**Reporting unit recall times** It is important AEMO provides additional guidance on how it expects participants to report unit recall times which are less than one hour, noting our understanding from the July workshop is that recall times are only to be reported in hours and not minutes / decimals. For example, are participants expected to round down the recall time submitted if the period is less than 30 minutes?	Agree. Additional guidance on recall information will be included in the draft procedure as suggested in submissions for second-round consultation.
3	EnergyAustralia	**ST PASA Replacement Project** Appendix C of AEMO's consultation paper suggests it will consider several of these issues separately as part of its Replacement Project, or that it is not proposing major changes to information in this consultation. We have some concerns that if matters are not resolved in developing its procedures now, there will be no further compulsion on AEMO to address them in the future. It may be the case that AEMO is deferring various matters as a matter of expediency and to ensure procedures are in force by 31 July, in line with new rule requirements. If this is AEMO's intention and it agrees that stakeholder suggestions have merit and should eventually be adopted, it should explicitly say so.	Noted. AEMO has not finalised the design of the ST PASA replacement treatment of recall information. However, under this consultation and system changes, recall information collected will be published and AEMO will provide guidance on recall information to be provided. In view of the complexity of issues raised in submissions on the provision of additional recall information, AEMO has not formed a view on the form and content of this information.
4	Energy Australia, Mercuria and Shell	**Detailed ST PASA Information to be published** Energy Australia are seeking similar information that was suggested by Mercuria [refer *ST PASA Procedures and related documents consultation paper*], namely technical availability measures and generally the same information as scheduled units in STPASA, MTPASA, PDPASA timeframes. This goes beyond publishing unit level availabilities to understanding AEMO's assumptions about fuel and other inputs, including at a regional level. Mercuria requests provision of semi-scheduled PASA-equivalent technical availability:	Noted. The information referred to in the submissions relating to fuel types and other technical availability measures are not used in PASA and AEMO does not consider this to be in scope for the ST PASA procedure. Noted. The availability information used by PASA is provided through the spot market bidding process.

No.	Stakeholder	Issue	AEMO response
		• At a regional aggregate level, by fuel, across all relevant timeframes (STPASA, PDPASA, MTPASA, as well as DISPATCH, P5MIN and PREDISPATCH) • On a unit-level basis where provided for scheduled generators – technical/PASA availability, and also "available capacity" ie factored by bid and fuel availability • Contribution to reserve from energy-limited plant, by region, interval, split by BDU/non-BDU (BDU will be batteries/short duration, and non-BDU hydro or thermal generation with less strict limits) – this will assist energy-limited plant to reserve their scarce energy for periods where the system most needs it • Technical availability measures for semi-scheduled generators by region, interval, split by fuel type (wind/solar) – this would assist in supply and outage planning, and over the longer term improve understanding of outage patterns which can then be accounted for in operational, analysis, modelling and trading activities of market participants • DUID-level data for semi-scheduled generators to match that of scheduled generators – ie forthcoming DUID-level PASA/MAXAVAIL reporting. Semi-scheduled PASA equivalent would be technical availability (minimum of upper mw limit or elements (un)available), MAXAVAILABLE would be the former factored by fuel availability and offered availability any information provided for scheduled generation should also be provided for semi scheduled generation (and split by fuel) Shell Energy recommends that the Pre-dispatch and ST PASA reliability assessment output files should contain additional availability, PASA availability and Unconstrained Intermittent Generation Forecast (UIGF) information on an individual Dispatchable Unit Identifier (DUID) basis. The current lack of transparency in the area should be rectified as soon as possible. Semi-scheduled generators currently submit maximum availability and PASA availability values and these values should be transparent on the same basis as it is for scheduled resources.	AEMO has reviewed these requests and considered them out of scope for this consultation. Maximum availability for semi-scheduled generation is based on either the unconstrained intermittent generation forecast or bid availabity if the unit is self-forecasting. This data will be published as part of this consultation. PASA availability is not collected for semi-scheduled generation.
5	Snowy Hydro	**The Amending rule will remove the arbitrary 24 hour notice period** • There needs to be further consulting with participants to redefine the current 24-hour time frame. • By removing the specification of a 24-hour recall period there will be a significant compliance burden imposed onto market participants to meet the new standard. • As the recall time proposal stands it will only add to the confusion for participants, whilst also increasing the burden and reporting requirements.	Agree. Additional guidance on recall information will be included in the draft procedure as suggested in submissions for second-round consultation. AEMO notes the concerns and considers the option to specify bands of recallable MW capacity has merit. AEMO considers this issue would require additional time to implement, and is therefore currently out of scope for this

No.	Stakeholder	Issue	AEMO response
		It is unclear why AEMO remains committed to the idea of specifying the recall time where a reduction in capacity exists. • Snowy Hydro believes an option would be to specify 2 to 3 bands (0-8 hrs, >8-24 hrs, >24-168 hrs) where recallable MW volumes are provided	consultation. AEMO will consider if this can be captured within the ST PASA Replacement Project.
	Snowy Hydro	**PASA Availability and Recall Time** We are supportive of amendments to the ST PASA that improve forecasting accuracy however there are changes that continue to require further consideration and, as they stand, could continue to lead to inefficient and inequitable market outcomes. AEMO should remove the need to report to the Generator recall portal as this will avoid the duplication of work. There is no need to keep the ability for participants to keep two tranches of recall and capacity and associated recall time. Snowy Hydro has not seen any reference to removing the obligation of updating the Generator Recall (in the AEMO Portal) on request. The STPASA changes are pointless for Snowy Hydro if this obligation remains, as they already have a mechanism to access recall information when it's needed. We hope AEMO can rectify this duplication.	Noted. The recall portal and SO_OP_3719 Procedure for Submitting Recall Information of Scheduled Generator Outages are out of scope for this consultation. However, AEMO will consider including this as an issue in the ST PASA replacement project consultation.
	Stanwell	**Inclusion of lack of reserve (LOR) events in ST PASA** Stanwell also supports the proposal to discontinue the low reserve condition (LRC) analysis from ST PASA as we agree it serves no operational decision-making purpose. We understand that lack of reserve (LOR) runs will continue in ST PASA with additional recall period timeframes now required in the bids. Stanwell has previously raised our concerns regarding the inclusion of lack of reserve (LOR) events in ST PASA, specifically the new proposal requiring participants to include their capacity related to LOR 2 and LOR 3 events. In our view the inclusion of additional information during LOR events in the ST PASA time window places an onerous and unnecessary burden on market participants.	Noted. Recall information is not to be used in the current ST PASA system. However, it will be published to allow participants to be informed and enable them to make decisions about their plant. The existing procedure and recall portal will provide information on capacity during LOR2 and LOR3 events in SO_OP_3719 and is out of scope for this consultation. However, AEMO notes concerns about provision of additional information but will defer consideration of this until procedure changes for the ST PASA replacement consultation.
	Stanwell	**ST PASA requirements for load and storage assets during LOR events** Further clarity is required (that could be outlined in the ST PASA Procedures) to understand the ST PASA requirements for load and storage assets during LOR events. As more renewables enter the market, reliability risk will also change to account for deficiencies in energy supply because of shortfalls associated with unplanned weather events. While additional storage and load will be needed, it is unclear how bidding in capacity during LOR events will impact storage and load assets.	Agree. AEMO will address these comments in the draft procedure for second-round consultation.

No.	Stakeholder	Issue	AEMO response
	Stanwell	**Unreasonably onerous obligation on market participants** While Stanwell supports this scope, we also believe the requirement for additional data inputs should not place an unreasonably onerous obligation on market participants, particularly during times of market and system stress when there is likely to be considerable uncertainty around the factors contributing to whether a unit can generate its actual bid in capacity. Based on our assessment of what is proposed in the ST PASA Procedures, the additional requirement to now include a recall period timeframe for LOR 2 and LOR 3 events in ST PASA places an additional and unnecessary burden on market participants and will work to erode much of the flexibility and collegiality that currently exists between AEMO and market participants.	Noted. The existing procedure and recall portal will provide information on capacity during LOR2 and LOR3 events in SO_OP_3719 and is out of scope for this consultation. However, AEMO notes concerns about provision of additional information but will defer consideration of this until procedure changes for the ST PASA replacement consultation.
	Shell	**Allocate daily energy limits firstly to the higher demand periods** Shell Energy supports AEMO's proposal to allocate daily energy limits firstly to the higher demand periods. An additional consideration that we believe is appropriate is that a unit's volume bid as fixed load or in a participant's band 1 should be dispatched first. This would ensure that technical minimum load for in-service units is appropriately allocated, with the remaining daily energy limit allocated firstly to the high demand periods. The ST PASA procedures document should fully detail how this allocation to high demand periods would be achieved.	Noted. AEMO will address the comments in the draft procedure for second-round consultation.
	Shell	**Intra-day recharging of bi-directional units (BDUs)** Recommends that STPASA reliability assessments take account of the potential for regular or routine intra-day recharging of bi-directional units (BDUs) as well as other energy storage systems. This would necessitate consideration of daily energy dispatch greater than registered maximum energy storage levels.	Agree. The current ST PASA does not have the capability to model battery cycling or intra-day recharging and will continue to use daily energy limits as for other energy limited plant. The procedure will include modelling assumptions for battery storage.
	Shell	**How stored energy would be allocated for reliability assessments** Seek further clarification regarding how stored energy would be allocated for reliability assessments when a BDU is bid available for discharge. We note that in the predispatch assessment, it isn't clear from the consultation paper why storage would be allocated to the next trading interval when the unit is bid available. We consider it more appropriate to allocate the storage to the highest demand periods.	AEMO will address the comments in the draft procedure for second-round consultation.
	Shell	**Potential discrepancy between the pre-dispatch reliability assessment and pre-dispatch forecast outcomes** We also note the potential discrepancy between the pre-dispatch reliability assessment and pre-dispatch forecast outcomes which could create confusion. In the case where a BDU's bid available capacity would see it fully	Noted. The current ST PASA allocates energy blocks to optimise reserves and does not perform an economic dispatch.

No.	Stakeholder	Issue	AEMO response
		discharge if a specific price level is reached, the BDU could be assessed as available to discharge in the reliability assessment but, based on pre-dispatch outcomes not be forecast to discharge. Shell Energy suggests greater clarity be provided in the procedure documents around the treatment of these issues.	Comments relating to dispatch and prices are potentially related to the ST PASA Replacement Project, these may be considered in future consultations.
	Shell	**Improve allocation of stored energy within the reliability assessments** A potential solution to improve allocation of stored energy within the reliability assessments is for AEMO to define both morning and evening peak periods and request additional data in participant bids regarding their intentions for storage operations. In the pre-dispatch reliability assessment, energy would be allocated firstly on the basis of pre-dispatch outcomes with any remaining energy allocated to the forecast highest demand periods first. In the ST PASA reliability assessment, energy would be allocated to the morning and evening peak demand periods separately based on the submitted daily energy limit allocating as suggested above. This would provide a market-based approach reflecting the participants best available information at the time the ST PASA submission is made. It would also facilitate improved accuracy in the ST PASA and pre-dispatch reliability assessments and help reduce the occurrence of false positive LOR declarations.	Noted. AEMO will provide more an explanation of the allocation of energy in the draft procedure for second-round consultation. AEMO will not be making any changes to the existing ST PASA engine as part of the rule change. The ST PASA Replacement Project will adopt a new algorithm and its performance during scenarios described in the submission will be assessed under that project.
	Shell	**Detailed ST PASA Information to be published** Shell Energy considers that the publication of scheduled load information would be beneficial to market participants. We suggest that load used to charge batteries and pumped hydro should be reflected in the demand forecast component of the pre-dispatch and ST PASA reliability assessment outputs.	Noted. The treatment of scheduled loads will be described in more detail in the draft procedure for second-round consultation. The current ST PASA does not have the capability to cycle storage systems to optimise available energy.
	Shell	**Detailed ST PASA Information to be published** Where the pre-dispatch or ST PASA assessments determine a power system security issue, this should be clearly stated via a power system security efficiency market notice. We believe such notices should provide full details of the identified power system security issue and the latest time to intervene. This approach would be similar to how lack of reserve periods are notified to the NEM.	Noted. This is out of scope for this consultation. The current ST PASA engine does not have the capability to determine a power system security issue that is not also a power system reliability issue. AEMO has not commenced work on interfacing the ST PASA replacement to other AEMO systems such as market notices.
	Mercuria	STPASA is frequently projecting a flat reserve number across multiple hours on an evening, as energy is allocated to maximise the lowest reserve point of a day – if this window period is of greater duration than a facility's storage duration, which intervals should they be reserving themselves for? Whilst price may provide some hint as to when scarce energy is valuable to the	Agree. AEMO will address this comment in the draft procedure for second-round consultation.

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		system, this is not a perfect signal and in some circumstances such as impending administered pricing can even give the wrong signals. AEMO should publish energy per interval, split by shorter-duration BDU and longer-duration energy-limited scheduled generators, to inform these participants where their contribution can provide the greatest benefit to the system.	Even though PASA does not consider dispatch or prices, these issues may be considered as part of future consultations.