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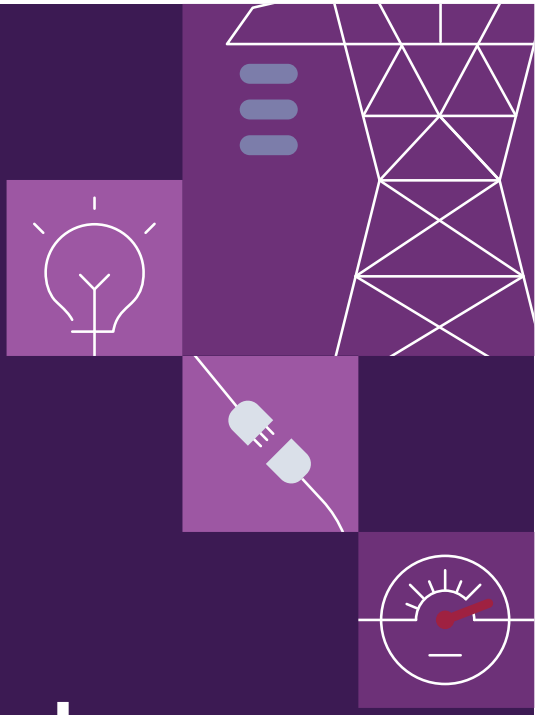

ST PASA Replacement Project – Procedure consultation

Consultation paper for the National Electricity Market

Published: 3 April 2025

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Explanatory statement and consultation notice

This consultation paper commences the first stage of the standard rules consultation procedure conducted by AEMO under clause 3.7.3(d) of the *National Electricity Amendment (Updating Short Term PASA) Rule 2022*[1] (**Amending Rule**), which will commence on 31 July 2025. This consultation covers some of the Short Term Projected Assessment of System Adequacy procedures (), which outline how AEMO ensures *power system security* and reliability after implementing the ST PASA Replacement project.

The standard rules consultation procedure is described in National Electricity Rules (**NER**) 8.9.2.

The Amending Rule introduced 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*. These changes have been incorporated in the ST PASA Procedure commencing on 31 July 2025[2].

AEMO is consulting on the ST PASA replacement project in two stages, **Consultation 1** and **Consultation 2**, to ensure relevant parties have adequate opportunity to engage on the extensive changes to the ST PASA process and the **ST PASA procedures**.

This consultation (**Consultation 1**) will consult on the ST PASA Procedure[3], describing the process, definitions, concepts, features, inputs and outputs that are to be used by the new ST PASA engine that AEMO is replacing[4]. Consultation 1 will also cover minor amendments to the *Reliability Standard Implementation Guidelines* (**RSIG**) and address topics raised through the ST PASA Procedure consultation that are within the scope of this consultation.

The second consultation (**Consultation 2**) is targeted to commence in Quarter 4 2025 after Consultation 1 has finished, and will consider proposed forecasting processing and aggregation of outputs to support supply reliability assessments and declaration of reserve levels. Consultation 2 will also cover consolidation of the reliability standard implementation in the ST PASA period to the *Reserve Level Declaration Guidelines* **(RLDG)** document. Minor consequential amendments to the *spot market* operations timetable will also be a part of Consultation 2.

The draft ST PASA Procedure accompanying this consultation paper has been rewritten and does not include marked changes, but does include data requirements and data outputs for the new ST PASA engine. This consultation also covers minor consequential amendments to the RSIG, which are change marked.

Consultation notice

AEMO is now consulting on this proposal and invites written submissions from interested persons on the issues identified in this paper to STPASAReplacement@aemo.com.au by 5:00 pm (Melbourne time) on 14 May 2025.

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

[2] The ST PASA Procedure coming into effect on 31 July 2025 is available at https://aemo.com.au/consultations/current-and-closed-consultations/st-pasa-procedures-and-related-documents-consultation.

[3] The *ST PASA procedures* (NER defined) are a group of procedures – the ST PASA Procedure is one of them.

[4] For more information on the ST PASA Replacement Project, please refer to https://www.aemo.com.au/initiatives/trials-and-initiatives/st-pasa-replacement-project. Note that post processing of the information by the new ST PASA engine does not form part of this consultation.

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

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 may 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. We 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

1. Stakeholder consultation process

AEMO is consulting on the ST PASA process and some of the **ST PASA procedures**[5] to be established under NER 3.7.3(d) of the Amending rule. Consultation on the proposal will be conducted in accordance with the standard rules consultation procedure in NER 8.9.2.

The proposal covers consequential changes to the RSIG, which is a part of the **ST PASA procedures**, as a result of the new ST PASA process.

Note that this consultation paper uses terms defined in the NER (as amended by the Amending Rule), 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
Pre-consultation information session	5 February 2025 (completed)
Consultation paper published	3 April 2025 (completed with this publication)
Submissions due on consultation paper	14 May 2025
Draft report published, including draft marked up consequential amendments to other impacted documents	24 July 2025
Submissions due on draft report	28 August 2025
Final report and documents published	Expected 6 November 2025

[5] Refer the Glossary of this document for the procedures and documents constituting **ST PASA procedures**

2. Background

2.1. Context for this consultation

AEMO is replacing the ST PASA engine following a series of power system incidents that highlighted that the existing PASA engine could not model the range of conditions required for AEMO to operate the power system securely and reliably.

AEMO, through the Updating Short Term PASA rule change, has developed a principles-based framework, linked to a PASA objective, to guide AEMO's administration of ST PASA and govern the ST PASA process.

This consultation paper sets out AEMO's proposal on the changes to the content in the ST PASA Procedure to incorporate the new ST PASA process, to align it with the new NER 3.7.3. The consultation includes minor consequential amendments that will be required for the RSIG.

This consultation is a continuation from the previous consultation which published the **ST PASA procedures**[6] that will commence on 31 July 2025. AEMO has addressed topics from the initial consultation, which were considered out of scope, in this Consultation 1. Refer to Appendix B for details.

2.2. NER requirements

For ST PASA, AEMO uses the inputs from registered participants and information produced by its own systems to forecast reliability and security conditions. The NER provide 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).*

The **ST PASA procedures** are to include the elements described in the new NER 3.7.3(c).

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 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*

[6] Relevant documents on the previous ST PASA Procedure consultaion are available at:

https://aemo.com.au/consultations/current-and-closed-consultations/st-pasa-procedures-and-related-documents-consultation

(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. Proposal discussion

3.1. Overview and effect of proposal

AEMO is amending the existing **ST PASA procedures** to describe the process for the new ST PASA (ST PASA engine and how AEMO uses it to operate the power system securely and reliably).

The new ST PASA engine relies on the information provided by Participants consistent with the NER, commencing on 31 July 2025. No additional information is required.

AEMO considers that this proposal meets the NEO with respect to reliability and security of supply of electricity and the reliability, and security of the national electricity system. AEMO anticipates that the proposal will not involve material costs for market participants.

3.1.1. ST PASA engine features

The objective of the ST PASA engine is to create a generation profile that meets the demand at each node in the National Electricity Market (**NEM**) network model.

Using a full network representation model of the power system taken from the real-time energy management system, the ST PASA uses planned network outages taken from the network outage scheduler (**NOS**), and availabilities of *scheduled resources* (scheduled generating units, semi-scheduled generating units, scheduled bidirectional units, scheduled loads, scheduled network services, and wholesale demand response units) taken from NEM bids to undertake the assessment.

3.2. Proposed content changes to align with new NER 3.7.3(c)

The sections below describe AEMO's proposal to align the sections within the ST PASA Procedure with the new ST PASA engine under the new NER 3.7.3(c).

3.2.1. How AEMO prepares inputs for ST PASA

The ST PASA Procedure describes how AEMO prepares the inputs necessary to take account of each of the factors in the new NER 3.7.3(g). There are no changes required to the information provided to AEMO, as inputs from Participants as part of this consultation. However, AEMO's inputs will change. Specifically, AEMO proposes to use demand forecasts (50% probability of exceedance [**POE**] and their forecast uncertainities) for each node instead of scheduled demand (50% POE) for each region.

Forecast availability of *scheduled resources* and unscheduled generation, taking into account forecasting uncertainties

AEMO is not proposing any changes to the way AEMO is currently sourcing *available capacity* of scheduled resources. AEMO will use Consultation 2 commencing in Quarter 4 2025 to consult on forecasting uncertainties of the nodal demand and applicable *scheduled resource* uncertainty to assess the supply reliability and power system security of the NEM.

3.2.2. Detailed ST PASA information to be published

AEMO is proposing to aggregate ST PASA nodal outputs into zones and regions for reporting and operational decision-making. The process for identifying zones will be reported in the RLDG, and will be subject to Consultation 2 expected to begin in Quarter 4 2025.

AEMO proposes that the ST PASA Procedure will set out the information to be published consistent with new NER 3.7.3(k):

- Aggregate zonal and regional load forecasts at 50% POE levels plus uncertainty measures.
- Forecasts of the *available capacity* of individual *scheduled resources*, and aggregated zonal and regional *available capacities*.
- Forecasts of *PASA availability* and the associated recall periods of *scheduled resources,* and aggregated zonal and regional *PASA availability*.
- For each of base, reliability and warning runs[7] of the ST PASA engine, and for each zone and region, identification and quantification of:
  - any projected violations of power system security;
  - any projected failure to meet the *reliability standard* as assessed in accordance with the RSIG, and indicated by a deficit of supply to meet forecast demand plus uncertainty measure at zonal level;
  - any forecast regional reserve conditions under NER 4.8.4; and
  - when and where network constraints may limit the dispatch of *scheduled resources*.

AEMO proposes that these ST PASA outputs will continue to be published via:

- ST PASA NEM Reports (via Data Interchange) – for market subscribed participants.
- Participant Data Model tables (which use these NEM Reports).
- NEMWeb.
- AEMO Web Portal.

3.2.3. Processes and methodologies applied to produce ST PASA information

AEMO is proposing a replacement ST PASA engine that has two components:

- power flow and contingency analysis to determine thermal constraints and losses; and
- a market clearing engine for security-constrained economic dispatch to determine an optimal dispatch solution.

The new PASA engine will not use regional lack of reserve (**LOR**) trigger levels, but will use nodal demand and applicable scheduled resource uncertainty margins to assess the reliability and security of each node. Nodes are then aggregated to pre-defined zones for reporting reliability and security.

[7] Refer to the ST PASA Procedure for explanations of ST PASA base, reliability and warning runs. The ST PASA Procedure is available at ..... (To be updated after the draft procedure is published on AEMO website).

AEMO's actions in response to the outcomes of the ST PASA process will be included in the procedure SO_OP_3703 - Short Term Reserve Management. The amendments will form part of Consultation 2.

3.2.4. ST PASA recall period

AEMO established procedures for collection and reporting of PASA availability and recall periods to be effective from 31 July 2025. AEMO is not proposing any changes in this consultation.

3.2.5. Energy constrained plant

Some *generating plant* cannot generally operate at maximum capacity indefinitely, otherwise their energy source will be used up. Such plant is known as energy limited plant.

The ST PASA engine has the functionality to model energy constraints over any time duration within its study period.

3.2.6. Modelling of bi-directional units

Generation and load components of bi-directional units are modelled in ST PASA.

3.2.7. Wholesale demand response

Wholesale demand response units (**WDR**) are not explicitly modelled in the ST PASA engine. Wholesale demand response contributions to reliability assessments are modelled via adjustments to demand forecasts.

3.2.8. Demand forecasts

AEMO proposes to prepare demand forecasts for approximately 1,700 nodes in the NEM based on a 50% POE adjusted by forecast uncertainty levels, with embedded generation subtracted to produce a net demand forecast at each node.

3.2.9. Uncertainty margins

The methodology for determining the uncertainty margins is part of the RDLG, which will form part of Consultation 2.

The uncertainty margin for each demand and supply node is an amount of megawatts (**MW**) that represents the expected *conditional*[8] forecast error for a specified *confidence level*[9].

Uncertainty margins at each supply node and for selected *scheduled resources* will be determined using a statistical 'backcasting' methodology. The confidence levels are adjusted to balance the number of shortfalls against risk of shortfalls. The uncertainty margins will be added to demand forecasts and resource capacities before each ST PASA run.

[8] Where the size will change depending on factors such as weather, hours or days ahead, demand types, and fuel types.

[9] Where a 95% confidence level means 19 times out of 20 the forecast error will not exceed this value.

3.3. Minor and administrative changes to the RSIG

While preparing the procedure changes, some minor and administrative changes to the RSIG have been identified and included in the consultation draft of the RSIG.

3.4. Proposed effective date

The Procedure will have an effective date of 31 August 2026.

The target go-live date for the ST PASA replacement is 31 August 2026. This date will be confirmed based on confirmation of AEMO and industry readiness.

3.5. Stakeholder feedback

AEMO is seeking stakeholder feedback on the proposed ST PASA Procedure and the change marked RSIG that are published with this consultation paper.

AEMO welcomes feedback and suggestions on these questions and any other matters relevant to the content of the Procedures as contemplated by the Amending Rule or other impacted documents. Submissions must be made by email to NEMReform@aemo.com.au by 5.00 pm on 14 May 2025.

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
HH	Half-hour (30-minute period)
LOR	Lack of reserve
NER	National Electricity Rules[10]
NEM	National Electricity Market
Node	The point of connection of equipment used in the power system model of the ST PASA engine, including *scheduled resources*, lines and transformers. Forecasts of demand and generation are prepared at the node level. Scheduled resources are dispatched at the node level.
NOS	Network Outage Scheduler
PD PASA	Pre-dispatch projected assessment of system adequacy
POE	Probability of exceedance
RLDG	*Reserve Level Declaration Guideline*
RSIG	*Reliability Standard Implementation Guideline*
ST PASA Procedure	The procedure AEMO uses to meet NER 3.7.3 (c) (1), (2), (3), (4).
ST PASA procedures	Group of procedures that includes ST PASA Procedure and relevant parts of SO_OP_3703, RSIG, RLDG, spot market operations timetable
SCED	Security constrained economic dispatch
ST PASA	Short term projected assessment of system adequacy
ST PASA engine	Mathematical model, inputs and the outputs of the ST PASA replacement tool
ST PASA process	ST PASA engine and how AEMO uses its outputs to operate the power system securely and reliably
Zone, zonal	Aggregate input and output information of nodal data, for each zone and used to report supply deficits.

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

Appendix B. Suggestions from previous ST PASA Procedure consultation deferred to the ST PASA Replacement consultations

Suggestions by participants	Proposed AEMO action
Address high level of false positive LOR declarations	AEMO will use appropriate uncertainty margins to report accurate reliability assessments. The approach to select appropriate uncertainty margins for this purpose will be a matter for ST PASA Replacement Consultation 2.
Treatment of bi-directional unit (BDU) capable of multiple charging/discharging cycles within a day	The new ST PASA system is capable of modelling multiple charging/discharging cycles within a day, like the NEM Dispatch Engine (**NEMDE**).
Complete modelling of BDUs and scheduled loads	The new ST PASA system will model scheduled loads as well as generation and load sides of BDUs.
Optimum use of BDU capacity during periods of forecast supply scarcity for charge and discharge	Generation and load sides of BDUs will be modelled hence the BDU capacity will contribute to reliability assessments optimally.
Publication of BDU energy utilised per interval in pre-dispatch (PD) and ST timeframes	BDU energy utilisation will be aggregated with the energy limited resources in PASA reports.
Treatment of hybrid plant	Hybrid plant consist of multiple DUIDs behind their connection points. Since ST PASA models all Dispatchable unit identifiers (**DUIDs**), hybrid plant will be correctly modelled in new ST PASA.
Regionally aggregated of PASA availability reporting	This issue will be addressed as a business-as-usual matter, before the implementation of new ST PASA.
Include PASA availability of semi-scheduled generation in publications	There is no NER obligation for AEMO to publish PASA availability of semi-scheduled generating units[11].
Suggested use of 2-3 recall bands, suggestion to rescind use of multiple tranches of recall and remove the requirement to use Generator Recall Portal to submit recall information of scheduled generator outages	Given the extent of changes associated with the new ST PASA to be consulted, AEMO decided to leave multiple recall tranches and the related matters out of scope of the ST PASA Replacement consultations.

[11] AEMO is exploring the possibility of designining PASA replacement software to continue aggregated semi-scheduled generation reports: semi-scheduled solar UIGF, semi-scheduled wind UIGF, semi-scheduled solar capacity, semi-scheduled wind capacity, semi-scheduled cleared solar and semi-scheduled cleared wind.

Appendix C. Questions for consultation

Questions	Stakeholder response
Are there any material adverse impacts of the ST PASA replacement project for registered participants, relative to the current ST PASA requirements?	
Are any additional clarifications needed from AEMO about the ST PASA replacement?	
Do participants have any other observations/comments?	