AEMC

RULE

Australian Energy Market Commission

DRAFT RULE DETERMINATION

NATIONAL ELECTRICITY AMENDMENT (UPDATING SHORT TERM PASA) RULE 2022

PROPONENT

Australian Energy Market Operator

2 DECEMBER 2021

INQUIRIES

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AEMC, Updating Short Term PASA, Draft rule determination, 2 December 2021

ABOUT THE AEMC

The AEMC reports to the Energy Ministers' Meeting (formerly the Council of Australian Governments Energy Council). We have two functions. We make and amend the national electricity, gas and energy retail rules and conduct independent reviews for the Energy Ministers' Meeting.

SUMMARY

1 The Australian Energy Market Commission (AEMC or Commission) has made a draft rule to amend the National Electricity Rules (NER) in relation to the short-term projected assessment of system adequacy (ST PASA). The draft rule is in response to a rule change request submitted by the Australian Energy Market Operator (AEMO). The draft rule provides AEMO with flexibility to update ST PASA over time so that it remains fit for purpose as the market develops, and reduces the cost and time associated with these updates.

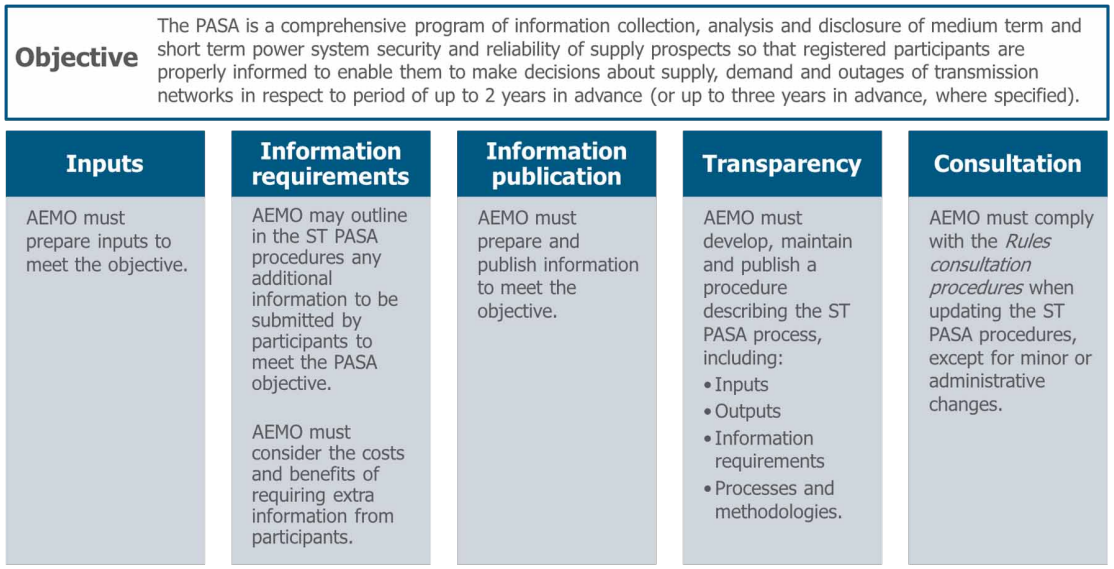
2 The draft rule is a more preferable draft rule. It is consistent with AEMO's rule change request, but incorporates a number of features to more effectively meet the needs of all market participants, including requiring AEMO to comply with the *Rules consultation procedures* whenever it is making changes to the ST PASA procedures.

Features of the more preferable rule

3 The Commission has made a more preferable draft rule.

4 The draft rule directly links ST PASA to the objective for PASA in clause 3.7.1(b), and introduces principles that are explicitly linked to the objective to guide AEMO as it administers ST PASA. An overview of the proposed rule is shown in figure 1.

Figure 1: Overview of principles-based approach to ST PASA



Source: AEMC
Note: A full description of the more preferable draft rule can be found in section 2.4.

5 In addition to the introduction of the principles based framework for ST PASA, the draft rule also:

- specifies that AEMO must publish forecasts of available capacity and PASA availability for individual generating units
- specifies that ST PASA is published over a seven-day period, combining pre-dispatch PASA and short-term PASA
- makes changes to the definition of energy constraint and PASA availability.

Benefits of the more preferable draft rule

6 Having regard to the issues raised in the rule change request, the Commission is satisfied that the more preferable draft rule is likely to better contribute to the achievement of the NEO. The draft rule:

- **Promotes reliability and security at lowest cost** by providing AEMO more flexibility to update the inputs used, the information required from participants and information published in ST PASA. The changes will improve the ability of AEMO to assess reliability and security conditions in the NEM as the market develops, and reduce the cost of including new information. The draft rule also improves the information provided to market participants. This will better inform the market of generation availability, and allow registered participants to make better informed decisions regarding scheduling planned maintenance and expected reliability and security conditions.
- **Minimises administrative compliance requirements and costs** by improving AEMO's flexibility to respond to changes in the market and removing unnecessary steps that may be required to make changes to ST PASA. The draft rule also requires AEMO to thoroughly consult with registered participants when making changes to ST PASA and to balance the benefits and costs of requiring more information from participants. The draft rule also improves transparency of AEMO's processes compared to the current arrangements by strengthening the reporting requirements on AEMO.
- **Promotes efficient facilitation of broader reform program** by linking information requirements and publication to the objective for PASA under clause 3.7.1 which clearly references power system security. These changes will facilitate the development of the ESB and AEMC system security work programs as the regulatory approach to the provision of system services continues to develop.

Implementation

7 There is still uncertainty regarding the commencement date of this rule. These areas are related to the implementation of the ST PASA replacement project, and include:

- availability of specialised resources
- timelines related to system changes
- relationship between implementation of AEMO's ST PASA system and the *Integrating energy storage systems into the NEM* rule change.

8 At this stage the Commission anticipates that this rule will not commence until at least quarter three 2023.

9 The Commission expects that a number of months will be needed for appropriate system

changes and for the ST PASA procedures to be developed. The final rule will take these into account when setting the commencement date and any transitional arrangements. Participants are encouraged to provide an indication of expectations regarding timeframes in submissions to the draft determination.

10 The Commission acknowledges that there is some overlap between the changes proposed in this rule change and the *Integrating energy storage systems into the NEM* rule change. The *Integrating energy storage systems into the NEM* rule change final determination is being published on the same day as this draft determination. Any discrepancies between the *Updating Short Term PASA* draft rule and the *Integrating energy storage systems into the NEM* final rule will be addressed in the final determination and rule for the *Updating Short Term PASA* rule change.

Consultation

11 The Commission welcomes submissions on this draft determination and the more preferable draft rule by **10 February 2022.**

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1 AEMO'S RULE CHANGE REQUEST

1.1 The rule change request

On 29 June 2021, the Australian Energy Market Operator (AEMO) made a request to the Australian Energy Market Commission (AEMC or Commission) to make a rule regarding the short-term projected assessment of system adequacy (ST PASA).[1]

AEMO's proposed changes are addressed in more detail in chapters three to six.

1.2 Current arrangements

The PASA is the principal method of indicating to the National Electricity Market (NEM) a forecast of electricity system reliability for a period of two to three years.[2] The PASA also takes into account power system security requirements to ensure that they are maintained. The subject of this rule change request relates to the short-term PASA process, or ST PASA.

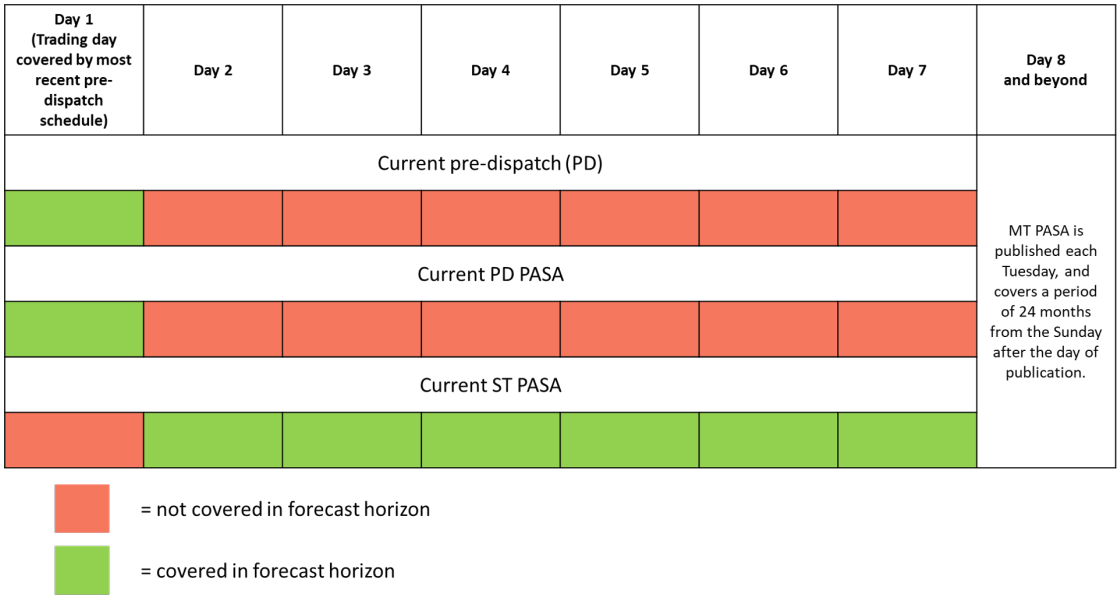
The NER requires AEMO to administer the PASA processes.[3] Rule 3.7.3 of the NER sets out the rules governing ST PASA. The NER requires that ST PASA covers six trading days from the end of the trading day covered by the most recent pre-dispatch schedule with a half-hourly resolution.[4]

AEMO has noted that, in practice, the current ST PASA is published for a seven trading day period. This is because pre-dispatch PASA (PD PASA) is run every 30 minutes on the 30-minute boundary from real-time until the end of the trading day for which dispatch bid prices are firm, i.e. the pre-dispatch horizon.[5] Therefore, in practice, PD PASA and ST PASA (referred to collectively as ST PASA by AEMO in the rule change request) cover the period from the end of the most recent 30 minute period until the end of the ST PASA period.

Figure 1.1 below provides an illustration of the PASA timeframes.

1 AEMO, *Updating Short Term PASA,* rule change request, 29 June 2021.
2 AEMC, *Improved transparency and extending duration of MT PASA*, consultation paper, 18 July 2019.
3 Clause 3.7.1 of the NER.
4 Clause 3.7.3(b) of the NER.
5 AEMO, *Updating Short Term PASA*, rule change request, 29 June 2021, p. 8.

Figure 1.1: PASA timeframes



Source: AEMC

Note: Clause 3.7.2 of the NER governs the MT PASA process. Clause 3.7.2(a) states that the medium term PASA covers the 24-month period (or, in the case of sub-paragraphs (d)(1)(i) and (f)(5) the 36-month period), commencing from the Sunday after the day of publication with daily resolution. The Spot Market Operations Timetable specifies that MT PASA is published each Tuesday. This means that in practice, the ST PASA will overlap with the information in the MT PASA for between one and six days between MT PASA publications.

1.3 Rationale for the rule change request

AEMO has argued that there are a number of issues with the existing NER framework for ST PASA, including:[6]

- the NER is overly prescriptive and limits flexibility to make changes that may be beneficial to the market
- the NER is inconsistent with what AEMO does in practice
- the NER contains definitions that are no longer fit for purpose.

1.4 Solution proposed in the rule change request

AEMO sought to resolve the issues discussed above by proposing a rule change to:[7]

- Introduce a principles-based framework in clause 3.7.3 of the NER to provide more flexibility to AEMO and market participants to update ST PASA.
- Combine the PD PASA and ST PASA processes and refer to them collectively as ST PASA.
- Require the publication of generation availability information on a per unit, or DUID, level.

6 AEMO, *Updating Short Term PASA,* rule change request, 29 June 2021, pp. 7-9.

7 AEMO, *Updating Short Term PASA,* rule change request, 29 June 2021, p. 9.

- Alter the definitions of PASA availability and energy constraint.

1.5 AEMO's ST PASA replacement project

AEMO is currently engaged in the ST PASA replacement project, which involves a comprehensive review of the PD and ST PASA methodology.[8] The project will explore the development of a system that should meet the current and future needs of the NEM.

PD PASA and ST PASA are the core systems used by AEMO and electricity industry stakeholders to identify and manage risks to power system security and reliability over the next seven days. AEMO has stated that the PD PASA and ST PASA systems were designed when most of the generation in the NEM was supplied from large thermal units connected to the transmission network.

The NER require AEMO to administer short term PASA.[9] AEMO has noted that an assessment of the current PD PASA and ST PASA systems highlighted that the power system is rapidly changing due to the advent of emerging technologies, such as battery storage, variable renewable energy (VRE) generation, virtual power plants (VPPs), and distributed energy resources (DER), and that the current systems are unable to model these technologies. The assessment also noted that the systems are unable to incorporate improvements in the modelling of intra-regional network issues, sharing of reserves across different regions and the allocation of energy-limited resources.[10]

In December 2019, AEMO engaged Intelligent Energy Systems (IES) and Steve Wallace Advisory (SWA) to consult with industry to understand the requirements for the ST PASA system going forward. AEMO concluded that the existing ST PASA system, even with modifications, will not be able to satisfy the NEM's future requirements. Increasing amounts of VRE generation, energy storage systems and DER, and decreasing amounts of large thermal generation mean that the current ST PASA system will not be able to effectively and robustly assist with the analysis of key risks and how they might impact system security and reliability.[11]

AEMO published an industry update in December 2020.[12] This update stated that the current design being considered by AEMO includes a full network model of the network currently modelled in ST PASA, with reliability being forecast at a nodal level. This method will allow for a more accurate reflection of the physical power system, especially during periods of intra-regional network outages. The new model will also address other issues, such as the improved handling of uncertainty, improved energy storage models, improved identification of system security issues, as well as the ability to suggest the lowest cost RERT activation schedules if required.

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8 AEMO, *ST PASA Replacement Project*, https://aemo.com.au/en/initiatives/trials-and-initiatives/st-pasa-replacement-project.

9 Clause 3.7.1(a) of the NER.

10 AEMO, *ST PASA Replacement Project*, https://aemo.com.au/en/initiatives/trials-and-initiatives/st-pasa-replacement-project.

11 Intelligent Energy Systems and Steve Wallace Advisory, *ST PASA Replacement Functional Requirements*, 20 May 2020, p. 64, https://aemo.com.au/en/initiatives/trials-and-initiatives/st-pasa-replacement-project.

12 AEMO, *ST PASA Replacement Project Industry Update*, 20 December 2020, https://aemo.com.au/-/media/files/initiatives/st-pasa-replacement-project/st-pasa-replacement-project—poc-showcase-may21.pdf?la=en.

The ST PASA replacement project is linked to this rule change because as part of the ST PASA replacement project, AEMO intends develop the ST PASA procedures in consultation with stakeholders.

1.6 The rule making process

On 26 August 2021, the Commission published a notice advising of its commencement of the rule making process and consultation in respect of the rule change request.[13] A consultation paper identifying specific issues for consultation was also published. Submissions closed on 23 September 2021.

The Commission received 15 submissions as part of the first round of consultation. The Commission considered all issues raised by stakeholders in submissions. Issues raised in submissions are discussed and responded to throughout this draft rule determination. Issues that are not addressed in the body of this document are set out and addressed in appendix A.

1.7 Consultation on draft rule determination

The Commission invites submissions on this draft rule determination, including a more preferable draft rule, by **10 February 2022**.

Any person or body may request that the Commission hold a hearing in relation to the draft rule determination. Any request for a hearing must be made in writing and must be received by the Commission no later than 9 December 2021.

Submissions and requests for a hearing should quote project number **ERC0332** and may be lodged online at www.aemc.gov.au.

13 This notice was published under s.95 of the National Electricity Law (NEL).

2 DRAFT RULE DETERMINATION

2.1 The Commission's draft rule determination

The Commission's draft rule determination is to make a more preferable draft rule. The draft rule:

- introduces a principles-based approach to ST PASA that is linked to the objective for PASA in clause 3.7.1(b)
- specifies that AEMO must publish forecasts of available capacity and PASA availability for individual generating units
- specifies that ST PASA is published over a seven day period, combining pre-dispatch PASA and short-term PASA
- makes changes to the definition of energy constraint and PASA availability.

The more preferable draft rule is consistent with AEMO's intent to introduce a principles-based approach to ST PASA, however there are differences in the details of the more preferable draft rule. The more preferable draft rule provides AEMO with more flexibility to update ST PASA so that it remains fit for purpose as the market develops, and reduces the cost of these updates. It also obligates AEMO to consult with market participants to ensure that ST PASA meets the needs of all relevant parties.

The Commission's reasons for making this draft determination are set out in section 2.5.

This chapter outlines:

- the rule making test for changes to the NER
- the more preferable rule test
- the assessment framework for considering the rule change request
- the key features of the more preferable draft rule
- the Commission's consideration of the more preferable draft rule against the national electricity objective.

Further information on the legal requirements for making this draft rule determination is set out in appendix B.

2.2 Rule making test

2.2.1 Achieving the NEO

Under the National Electricity Law (NEL) the Commission may only make a rule if it is satisfied that the rule will, or is likely to, contribute to the achievement of the national electricity objective (NEO).[14] This is the decision-making framework that the Commission must apply.

The NEO is:[15]

14 Section 88 of the NEL.
15 Section 7 of the NEL.

> 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.

2.2.2 Making a more preferable rule

Under s. 91A of the NEL, the Commission may make a rule that is different (including materially different) to a proposed rule (a more preferable rule) if it is satisfied that, having regard to the issue or issues raised in the rule change request, the more preferable rule will or is likely to better contribute to the achievement of the NEO.

In this instance, the Commission has made a more preferable rule. The reasons are summarised below in section 2.5.

2.2.3 Making a differential rule

Under the Northern Territory legislation adopting the NEL, the Commission may make a differential rule if, having regard to any relevant MCE statement of policy principles, a different rule will, or is likely to, better contribute to the achievement of the NEO than a uniform rule. A differential rule is a rule that:

- varies in its term as between:
  - the national electricity system, and
  - one or more, or all, of the local electricity systems, or
- does not have effect with respect to one or more of those systems

but is not a jurisdictional derogation, participant derogation or rule that has effect with respect to an adoptive jurisdiction for the purpose of s. 91(8) of the NEL.

As the rule relates to parts of the NER that currently do not apply in the Northern Territory, the Commission has not assessed the rule against the additional elements required by the Northern Territory legislation.[16]

2.3 Assessment framework

In assessing the rule change request against the NEO the Commission has considered the following principles:

- Promoting reliability and security at lowest cost: Maintaining a secure and reliable power system is a critical objective of the NEO and in the long-term interest of consumers. The Commission considers that the rule change request addresses reliability and security in two ways:

16 From 1 July 2016, the NER, as amended from time to time, apply in the NT, subject to derogations set out in regulations made under the NT legislation adopting the NEL. Under those regulations, only certain parts of the NER have been adopted in the NT. (See the AEMC website for the NER that applies in the NT.) National Electricity (Northern Territory) (National Uniform Legislation) Act2015.

  - Provision of information to the market: The Commission will consider the benefits of ST PASA providing more transparent and accurate information to the market, as well as the potential risk of co-ordination or manipulation that may arise when market participants have increased visibility of their rivals' position.
  - Provision of information to AEMO: The Commission will consider the benefits of improved information in relation to more efficient use of reliability and security interventions by AEMO, particularly in relation to the reliability and emergency reserve trader (RERT) and directions.
- Administrative compliance requirements and costs: Changes to requirements for AEMO and market participants will lead to changes in administrative costs and could increase the regulatory burden faced by these parties. The Commission will consider the impact of the proposed solution on these costs.
- Efficient facilitation of broader reform program: The Commission notes that ST PASA is related to a number of ongoing work programs, particularly with the ESB and AEMC system security work programs. The Commission will consider the extent to which the proposed solution will efficiently facilitate related projects.

2.4 Key features of the more preferable draft rule

The Commission has made a more preferable draft rule.

The draft rule directly links ST PASA to the objective for PASA in clause 3.7.1(b), and introduces principles that are explicitly linked to the objective to guide AEMO as it administers ST PASA.[17] The objective for PASA under clause 3.7.1(b) is:

> The PASA is a comprehensive program of information collection, analysis, and disclosure of medium term and short term power 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).

AEMO is required to develop and publish the ST PASA procedures, which describe:[18]

- how AEMO will prepare inputs for ST PASA
- the information AEMO will publish to meet the ST PASA objective
- the processes and methodologies AEMO will apply to produce the ST PASA information
- the period to be covered by the short term PASA if it is different to a 30-minute period
- any additional information to be submitted by each relevant participant.

AEMO will have discretion to consult with participants on the inputs that it uses in the ST PASA, the information that AEMO may require from participants to meet the objective, the information it publishes in the ST PASA and its processes and methodologies for

17 See clauses 3.7.3(g)(4), 3.7.3(h)(3) and 3.7.3(k) in the amending rule.
18 See clause 3.7.3(c) in the amending rule.

administering the ST PASA. AEMO must consider the benefits and costs of collecting the relevant information from Registered Participants.[19] AEMO must comply with the *Rules consultation procedures* when developing and amending the ST PASA procedures, except for minor or administrative changes.[20] The Commission expects that AEMO will consult with the AEMC and the AER during this process.

The draft rule specifies that AEMO must publish forecasts of the available capacity and PASA availability of individual generating units.[21]

The draft rule specifies that ST PASA is published over a seven-day period, combining PD PASA and ST PASA.[22]

The draft rule enables AEMO to publish the short-term PASA with a granularity of less than 30 minutes. This will provide AEMO with flexibility to adjust the granularity of ST PASA.[23]

While the Commission's draft rule is a more preferable rule, it incorporates many of the elements proposed by AEMO. The key differences between the draft rule and the proposed rule are that the Commission has:

- Removed the proposed objective, and used the existing objective in clause 3.7.1(b).
- Provided AEMO with more flexibility to update information requirements from participants regarding the ST PASA so that it remains fit for purpose as the NEM evolves.
- Provided AEMO with flexibility to update the interval to be covered by the ST PASA.
- Changed the consultation requirements to require AEMO to follow the *Rules consultation procedures*, instead of a single-stage consultation process.
- Made drafting changes to proposed definitions.

2.5 Summary of reasons

The more preferable draft rule made by the Commission is attached to and published with this draft rule determination. The key benefits from the more preferable draft rule are that it:

- provides AEMO with more flexibility to update ST PASA over time so that it remains fit for purpose
- reduces the time and costs associated with making changes
- improves the transparency of the ST PASA process
- amends definitions in the rules to enable the provision of more relevant information to the market.

Having regard to the issues raised in the rule change request and during consultation, the Commission is satisfied that the more preferable draft rule is likely to better contribute to the achievement of the NEO. The draft rule:

19 See clause 3.7.3(c)(5) in the amending rule.
20 See clause 3.7.3 (d) and (e) in the amending rule.
21 See clauses 3.7.3(k)(2) and (3) in the amending rule.
22 See clause 3.7.3(b) in the amending rule.
23 See clause 3.7.3(b) in the amending rule.

- **Promotes reliability and security at lowest cost** by providing AEMO more flexibility to update the inputs used, the information required from participants and information published in ST PASA. The changes will improve the ability of AEMO to assess reliability and security conditions in the NEM as the market develops, and reduce the cost of including new information. The draft rule also improves the information provided to market participants. This will better inform the market of generation availability, and allow market participants to make better informed decisions regarding scheduling planned maintenance and expected reliability and security conditions.
- **Minimises administrative compliance requirements and costs** by improving the flexibility of AEMO to respond to changes in the market and removing unnecessary steps that may be required to make changes to ST PASA. The draft rule also requires AEMO to thoroughly consult with market participants when making changes to ST PASA and to balance the benefits and costs of requiring more information from participants. The draft rule also improves transparency of AEMO processes compared to the current arrangements by strengthening the reporting requirements on AEMO.
- **Promotes efficient facilitation of broader reform program** by linking information requirements and publication to the objective for PASA under clause 3.7.1 which clearly references power system security. These changes will facilitate the development of the ESB and AEMC system security work programs as the regulatory approach to the provision of system services continues to develop.

Further detail on the more preferable draft rule can be found in chapters three to six below.

3 INTRODUCTION OF A PRINCIPLES-BASED APPROACH FOR ST PASA

This chapter discusses stakeholder feedback, and presents the Commission's analysis and conclusions, regarding AEMO's proposal to introduce a principles-based approach to the NER in relation to ST PASA.

3.1 AEMO's proposal

As discussed in section 1.3, AEMO raised a number of issues with the current ST PASA framework in the NER.

AEMO considered that there are inputs to, and outputs of the ST PASA process specified in clause 3.7.3 of the NER that may no longer be useful to market participants or may not be used in the new ST PASA system. AEMO stated that unnecessarily requiring information in the NER instead of in AEMO procedures can lead to a misalignment of what information is needed or used and creates ambiguity for market participants.[24]

Additionally, AEMO stated that the current arrangements in the NER limit its flexibility to make changes to the ST PASA requirements to improve ST PASA over time. AEMO noted that it is important to allow for sufficient flexibility to implement modelling changes identified in consultation with stakeholders in a more timely manner, and with fewer costs involved, than would be allowed by the current arrangements.[25] This will allow AEMO to develop ST PASA to reflect the changing power system.

AEMO has indicated that in order for the new ST PASA process to continue to meet its objectives and develop with a changing power system, a less prescriptive and clearer rule is needed.[26] AEMO has proposed that a principles-based approach to the NER in relation to ST PASA would meet the needs that AEMO has described. The draft rule that AEMO has proposed would continue to define the minimum requirements for AEMO and market participants in relation to ST PASA at a high level.

AEMO has stated that implementing its proposed approach would allow it the flexibility to consult with market participants on the more detailed design of the inputs and outputs. These specifications would be published in AEMO procedures, known as the ST PASA procedures. AEMO has stated that the proposed rule simplifies the drafting of information that registered participants must provide to AEMO without changing the underlying requirements.[27]

In the proposed draft rule, AEMO included the following components:

1. an ST PASA objective

24 AEMO, *Updating Short Term PASA,* rule change request, 29 June 2021, p. 8.
25 AEMO, *Updating Short Term PASA,* rule change request, 29 June 2021, p. 9.
26 AEMO, *Updating Short Term PASA,* rule change request, 29 June 2021, pp. 7-8.
27 AEMO, *Updating Short Term PASA,* rule change request, 29 June 2021, p. 9.

2. a requirement for AEMO to develop and publish procedures to describe the ST PASA inputs, outputs and methodology
3. a provision allowing AEMO to undertake a single stage consultation process for the ST PASA procedures[28]
4. a requirement for AEMO to publish ST PASA at least daily[29]
5. a requirement for AEMO to prepare various ST PASA inputs
6. a replacement of references to Scheduled Generator and Market Participant with the generic term, Registered Participant[30]
7. a requirement for AEMO to publish ST PASA information to reflect the objective, including some specific information such as load forecasts and generator availability information.

3.2 Stakeholder views

All stakeholders acknowledged that improvements can be made to the existing framework for ST PASA in the NER.

The following sections address the key issues raised by stakeholders.

3.2.1 Appropriateness of a principles-based approach

Many stakeholders were supportive of a principles-based approach to ST PASA.[31] These stakeholders noted that there would be benefits associated with providing AEMO greater flexibility to update ST PASA.

AGL and Iberdrola Australia were generally supportive of AEMO having flexibility to update ST PASA, but raised some concerns with the proposed approach:

- AGL noted that the current ST PASA framework provides certainty and industry wide consensus of the information required and the ST PASA information provided by AEMO. It also commented that frequent changes to ST PASA will pose challenges for market participants to vary internal reporting procedures and could result in costly system changes.[32]
- Iberdrola Australia commented that the proposal to move requirements set out in the rules to an AEMO owned ST PASA procedure creates concern over the reduced level of

28 On 8 January 2021, the AEMC received a rule change request from AEMO to amend the National Electricity Rules consultation procedures and the Gas extended consultation procedure. AEMC, *Improving consultation procedures in the Rules*, https://www.aemc.gov.au/rule-changes/improving-consultation-procedures-rules.

29 As is the case with the current arrangements, this is a minimum requirement.

30 On 15 July 2021, the AEMC made a draft rule in the *Integrating energy storage systems into the NEM* rule change. The draft rule removes the term Scheduled Generator from clause 3.7.3 (e) of the NER, however does not change the term Market Participant. AEMO's proposed changes would replace the term Market Participant with the term Registered Participant. As noted in Section 5.1.6, the term Market Participant is contained within the definition of Registered Participant. The Commission considers the proposed changes will not impact the draft rule made in the *Integrating energy storage systems into the NEM* rule change. AEMC, *Integrating energy storage systems into the NEM*, https://www.aemc.gov.au/rule-changes/integrating-energy-storage-systems-nem.

31 Consultation paper submissions: AEC, p. 1; Alinta Energy, p. 1; Citipower, Powercor, United Energy, p. 1; CS Energy, p. 2; Energy Australia, p. 1; Origin Energy, p. 1.

32 Consultation paper submission: AGL, p. 2.

independent governance involved in the management of operating reserves. It also noted concerns about the interaction between ST PASA and the use of the RERT.[33]

On the other hand, the Energy Users Association of Australia (EUAA), Major Energy Users (MEU), Shell Energy and Snowy Hydro opposed a principles-based approach to ST PASA.[34] In particular:

- Snowy Hydro noted that placing specific ST PASA requirements in AEMO procedures would remove an important check against unsound changes to ST PASA.[35]
- Shell Energy considered that the prescriptive nature of the rules provided certainty to market participants. It also noted that providing AEMO with flexibility may lead to ST PASA not meeting the needs of all market participants. It did not consider that the threshold for making a principles-based rule had been met.[36]

3.2.2 Objective for ST PASA

Alinta Energy was supportive of setting the ST PASA objective as proposed by AEMO.[37]

CS Energy, Shell Energy and AGL noted that clause 3.7.1(b) of the NER already provides an objective for ST PASA.[38] AGL also considered that the proposed objective was not appropriate, and that any objective should still include the ultimate purpose of informing market participants.[39]

3.2.3 Consultation requirements

Many stakeholders considered that the proposed rule should require AEMO to undertake a rigorous consultation process.[40]

- Iberdrola Australia stated that there were material risks associated with moving the prescribed ST PASA process to AEMO procedures. It noted that the rules should dictate strict limits and obligations to ensure that AEMO continues to manage the power system in line with the expectations of consumers.[41]
- AGL noted that the PASA information requirements are critical obligations, and that the consultation process must therefore provide particiants with an opportunity to understand any changes and for AEMO to clarify any uncertainty.[42]

AEMO noted that its intent is to establish the initial ST PASA procedures using the full *Rules consultation procedures* together with additional engagement mechanisms such as working groups and briefings if necessary. In its view, there is a significant amount of detail to consult

33 Consultation paper submission: Iberdrola Australia, p. 2.
34 Consultation paper submissions: EUAA, p. 1; MEU, p. 2, Shell Energy, p. 2; Snowy Hydro, p. 2.
35 Consultation paper submission: Snowy Hydro, pp. 2-3.
36 Consultation paper submission: Shell Energy, pp. 2-3.
37 Consultation paper submission: Alinta Energy, p. 1.
38 Consultation paper submissions: AGL, p. 1-2; CS Energy, p. 4; Shell Energy, p. 6.
39 Consultation paper submission: AGL, p. 2.
40 Consultation paper submissions: AEC, p. 2; Citipower, Powercor, United Energy, p. 1; Origin Energy, p. 1; Alinta Energy, p. 1; CS Energy, p. 3.
41 Consultation paper submission: Iberdrola Australia, pp. 1-2.
42 Consultation paper submission: AGL, pp. 2-3.

on with stakeholders. In addition, it noted that the proposed rule would still allow it to undertake an additional consultation round where appropriate for any given change to the ST PASA procedures, while providing flexibility to adopt effective forms of consultation with a minimum of one stage of formal written submissions.[43]

3.2.4 Inputs to ST PASA

Some stakeholders raised concerns regarding AEMO's proposed approach to the inputs to ST PASA.[44]

- Shell Energy did not support the inclusion of forecasting uncertainty within the ST PASA, noting that it could lead to double-counting uncertainty values. It noted that a prescriptive set of inputs is essential for a consistent approach and a repeatable process.[45]
- AGL noted it was unclear why the ST PASA inputs, outputs and methodology must only be outlined in AEMO procedures.[46]
- MEU noted that a benefit of a prescriptive approach is that deeper analysis by an independent party would be required to implement any change to ST PASA inputs, outputs and processes.[47]
- Snowy Hydro noted that placing ST PASA requirements in AEMO procedures could, over time, significantly increase the compliance cost on generators without any corresponding market benefit.[48]

3.2.5 Publication of information from ST PASA

EnergyAustralia noted that semi-scheduled unit information should explicitly cover technical availability (i.e. not just adjusted for fuel availability) in the same way as for scheduled generators. In its view, a forward-looking measure of technical availability of wind and solar resources would capture any plant limits imposed by outages on inverters, turbines, transformers etc. This would enable participants to make better decisions regarding resource commitment.[49]

CS Energy was of the view that the current specification of probability of exceedance demand forecasts at 10 per cent, 50 per cent and 90 per cent should be maintained. It also suggested that power system security parameters, including but not limited to inertia, reactive power and system strength are detailed to the market.[50]

43 Consultation paper submission: AEMO, pp. 3-4.
44 Consultation paper submission: Shell Energy, p. 3; AGL, p. 2; MEU, p. 3; Snowy Hydro, p. 2.
45 Consultation paper submission: Shell Energy, p. 3.
46 Consultation paper submission: AGL, p. 2.
47 Consultation paper submission: MEU, p. 3.
48 Consultation paper submission, Snowy Hydro, p. 2.
49 Consultation paper submission, EnergyAustralia, p. 1.
50 Consultation paper submission: CS Energy, pp. 2; 5.

3.2.6 Interaction between ST PASA and the LOR and RERT frameworks

Shell Energy, the EUAA, MEU, and Iberdrola Australia raised concerns about the interactions between ST PASA and the lack of reserves (LOR) and RERT frameworks. They suggested that AEMO appears to view reliability as a major risk and wants to avoid load-shedding, potentially at all costs. These stakeholders noted that a principles-based approach would create the risk of a strategy of maintaining reliability at a higher level than the reliability standard occurring.[51]

CS Energy noted that ST PASA should not conflate system reliability and network reliability. It considered that network reliability, or shortfalls at nodes other than the regional reference node, can be managed in the outage assessment process that can include an assessment on the suitability of utilising RERT to manage an identified system security issue.[52]

AEMO acknowledged that there is an interaction between the ST PASA replacement project and the LOR framework, but that it has not proposed any changes to clause 4.8.4 of the NER. It noted that as part of its consultation on the ST PASA procedures, AEMO intends to review the current LOR framework and consult on this review and potential changes to the reserve level declaration guidelines.[53]

3.2.7 Transparency of AEMO's approach

Amber Electric suggested that AEMO should publish information relating to their modelling processes, and about how inputs are turned into outputs. It also noted that information on the formulation of the nodal network model would be valuable for the market.[54]

Citipower, Powercor and United Energy supported greater transparency of AEMO's methodology and forecasting approach.[55]

3.3 Analysis

AEMO has proposed the introduction of a principles-based approach to the NER in relation to ST PASA, arguing that the proposed approach would allow ST PASA to continue to meet its objectives and develop with a changing power system.

3.3.1 Introducing a principles-based approach to ST PASA in the NER

The Commission considers that the current arrangements in the NER in relation to ST PASA are prescriptive and may limit the ability of AEMO to update ST PASA.

All markets for services require a flow of clear and relevant information to promote competition and efficient outcomes over time. One of the purposes of ST PASA is to provide information to the market regarding the likely state of the market in the future. It is important that the information provided in ST PASA is as accurate as possible, and that

51 Consultation paper submissions: Shell Energy, p. 2; Iberdrola Australia, p. 2; EUAA, p. 1; MEU, p. 4.
52 Consultation paper submission: CS Energy, p. 5.
53 Consultation paper submissions: AEMO, p. 3.
54 Consultation paper submission: Amber Electric, pp. 1-2.
55 Consultation paper submission: Citipower, Powercor, United Energy, p. 1.

participants understand how the forecast of future market conditions is produced, so that they can make well-informed decisions about availability of their plant.

There has been significant change in the NEM in the last five years. This includes increases in the penetration of new generation technologies, including VRE generation, as well as a significant increase in the penetration of distributed energy resources (DER), most notably rooftop PV.[56] There are also expected to be ongoing increases in the penetration of these two technologies, as well as others, such as battery energy storage systems (BESS) and hybrid renewable and storage generation facilities.[57] Pumped hydro projects may also increase in penetration over time.

The Commission considers that changes to existing market frameworks are required to efficiently facilitate the ongoing adoption of these new technologies and acknowledges AEMO's proposal that changes may be needed to model technologies and processes such as BESS, demand response and DER. Information requirements may also need to be updated in order to facilitate the adoption of these technologies, and to ensure that ST PASA is able to provide information that accurately reflects the state of the market. Provision of relevant information is also essential to the ongoing efficient operation of the market.

BOX 1: STORAGE CAPACITY AND MARKET INFORMATION

Battery energy storage systems are a technology that has different characteristics to traditional generation plant. This is because, regarding energy output, BESS are very flexible in MW output, but often limited in MWh output. It is important for AEMO and the market to be able to understand and accommodate the characteristics of this plant, including availability, into forecasts of power system conditions into the future.

The current arrangements are prescriptive about the way that AEMO must consider energy constrained resources such as BESS. Under the current prescriptive arrangements for ST PASA, it is likely that rule changes would be needed to ensure that ST PASA can effectively incorporate any relevant new information over time. There are also prescriptive requirements regarding the information that AEMO must publish about energy constrained resources. These arrangements do not grant AEMO flexibility to adapt ST PASA to accommodate increasing penetrations of BESS over time.

Changes to the way in which BESS are considered in the ST PASA process are likely to occur as AEMO and the market develop operational experience with higher penetrations of these new technologies. A principles-based approach to ST PASA will provide AEMO and the market the flexibility to make changes to modelling processes, information requirements and information publication over time. There are also some immediate changes that AEMO could make in ST PASA and elsewhere regarding the provision of BESS information to the market, including:

56 Reliability Panel, *2020 Annual Market Performance Review,* 20 May 2021, pp. 32; 48, aemc.gov.au/sites/default/files/2021-05/Final%20report.pdf

57 AEMO, *Integrating Energy Storage Systems into the NEM,* rule change request, 20 August 2020, p. 5.

- providing more visibility about where AEMO is taking energy storage reserves into account in ST PASA
- providing more transparency of the different types of resources, including BESS, that contribute towards forecast availability
- making current state of charge information more transparent.

Source: AEMC.

The Commission also agrees with AEMO's proposal that changes may be needed to account for the availability of essential system services, including frequency control ancillary services (FCAS), inertia, system strength and ramping requirements. As the understanding of the requirements needed to operate the power system in a secure and efficient manner continue to develop, changes to ST PASA may be needed to facilitate this process.

The Commission agrees with stakeholders that there are some risks associated with introducing a principles-based approach to ST PASA, including:

- The potential for reduced certainty regarding requirements and information published in ST PASA.
- Risks associated with the interaction between ST PASA and the LOR and RERT frameworks.
- The potential for ST PASA to become less transparent.

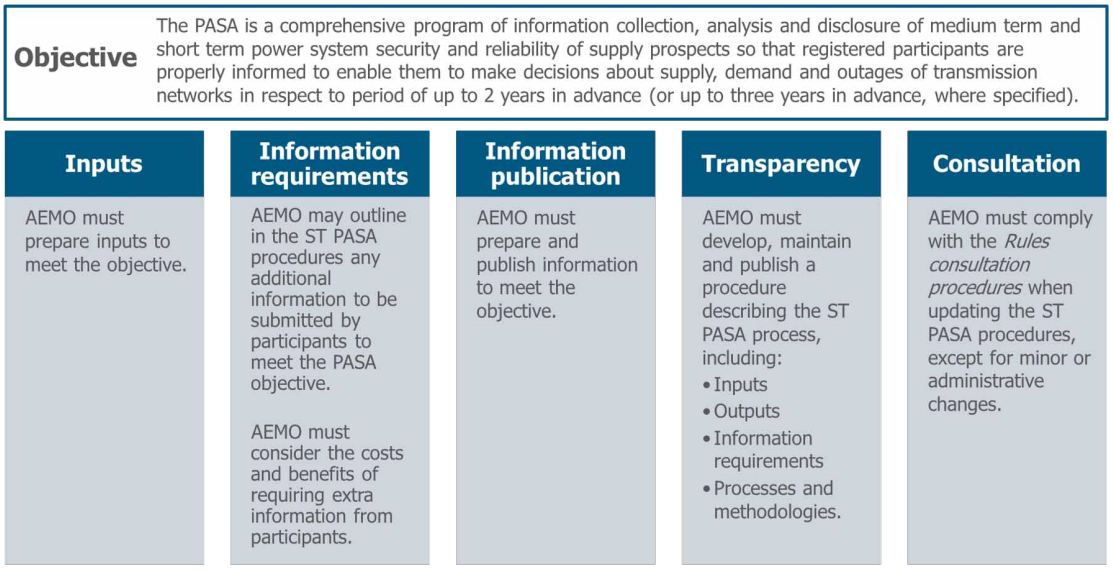
3.4 Commission's position

The Commission's draft decision is to introduce a principles-based approach to ST PASA in the NER.

3.4.1 Overview of the principles-based approach to ST PASA

The draft rule is explained in figure 3.1 below:

Figure 3.1: Overview of principles-based approach to ST PASA



Source: AEMC
Note: A full description of the more preferable draft rule can be found in section 2.4.

The Commission considers that the benefits of introducing a principles-based approach to ST PASA in the NER outweigh the disadvantages. Given the significant changes that are occurring in the NEM, it is important to develop flexible and adaptive market and regulatory frameworks. A principles-based approach to ST PASA will enable it to more effectively meet the evolving needs of AEMO and market participants over time by reducing the regulatory burden that these changes would require.

The draft rule directly links the ST PASA to the PASA objective in clause 3.7.1(b):

> The PASA is a comprehensive program of information collection, analysis and disclosure of medium term and short term power 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).

This objective captures the uses for ST PASA of both AEMO and market participants, and provides certainty and clarity regarding the core functions of ST PASA, which are not expected to change.

This objective enables the rules to be written in a way that provides flexibility to AEMO to change specific elements of ST PASA as the market develops, but also ensures that the underlying needs of all market participants continue to be met.

The draft rule states that AEMO must prepare inputs and publish information to meet the PASA objective.[58] By linking these paragraphs to the objective, AEMO and market participants are provided with clear outcomes to be achieved by ST PASA over time, and the ability to update the ST PASA information to best achieve these outcomes. This information is to be decided on through consultation with stakeholders. AEMO has the ability to specify the details of this information in the ST PASA procedures. The draft rule therefore provides more flexibility to change ST PASA by removing the number of processes involved in making changes.

The draft rule states that AEMO can require additional information from participants to meet the PASA objective under clause 3.7.1(b). Any further information required from participants must be set out in the ST PASA procedures.[59] The Commission notes that this change was not included in AEMO's proposed rule change.

AEMO has indicated that there are not expected to be any immediate changes to the information that is required. To the extent that changes to information requirements from participants are not needed, AEMO can choose not to specify any additional information in the ST PASA procedures. This provision will ensure that AEMO is not limited in the rules to make any future changes to ST PASA that may require new or different information from market participants.

3.4.2 The principles-based approach mitigates costs and risks raised by stakeholders

The Commission also considers that the costs and risks associated with a principles-based approach to ST PASA that were raised by stakeholders can be effectively mitigated by the draft rule.

Costs of ongoing changes to participants

The draft rule introduces a principle to ensure that AEMO must consider the benefits and costs of collecting the relevant information from registered participants.[60] This ensures that the costs to participants of any future changes to the information requirements for ST PASA are considered during the consultation process.

The Commission considers that although AEMO must have regard to the NEO as specified in the NEL, it is appropriate in this instance to provide guidance for the way that AEMO interprets the NEO.

Repeatable and consistent approach to ST PASA

The draft rule also introduces a number of features to ensure that there is certainty, clarity and transparency for all participants regarding the ST PASA process. AEMO must develop, maintain and publish a procedure describing the ST PASA process, including inputs, outputs,

58 See clauses 3.7.3(g)(4) and 3.7.3(k) in the amending rule.
59 See clause 3.7.3(h)(3) in the amending rule.
60 See clause 3.7.3(c)(5) in the amending rule.

processes and methodologies.[61] This procedure will provide certainty of the ST PASA process and ensure that it is repeatable and consistent for participants.

Furthermore, AEMO must follow the *Rules consultation procedures* when making changes to the ST PASA procedures, with the exception of minor or administrative changes.[62] The *Rules consultation procedures* incorporate a two-stage consultation process, and this will ensure that participants are able to effectively engage with AEMO regarding any proposed changes to ST PASA.

Risks associated with the LOR and RERT frameworks

The risks associated with the LOR and RERT frameworks can also be mitigated by features of the draft rule. The PASA objective ensures that AEMO must consider any information so that participants are properly informed regarding power system security and reliability conditions.[63] By doing so, the objective mitigates the risk that AEMO may not include relevant information in the assessment of reliability conditions.

The requirement for AEMO to develop the ST PASA procedures also introduces transparency regarding AEMO's processes when conducting ST PASA. This transparency will enable effective scrutiny of the ST PASA process by other participants to ensure that it is being properly conducted.

The Commission considers that there are other additional safeguards in the NER to mitigate the potential risk of AEMO maintaining a level of reliability higher than the reliability standard. Details regarding the existing safeguards in the NER regarding the LOR and RERT framework can be found in appendix C.

61 See clause 3.7.3(c) in the amending rule.
62 See clauses 3.7.3(d) and 3.7.3(e) in the amending rule.
63 See clause 3.7.1(b) in the NER.

4 SPECIFICATION OF ST PASA BEING PUBLISHED OVER SEVEN DAYS

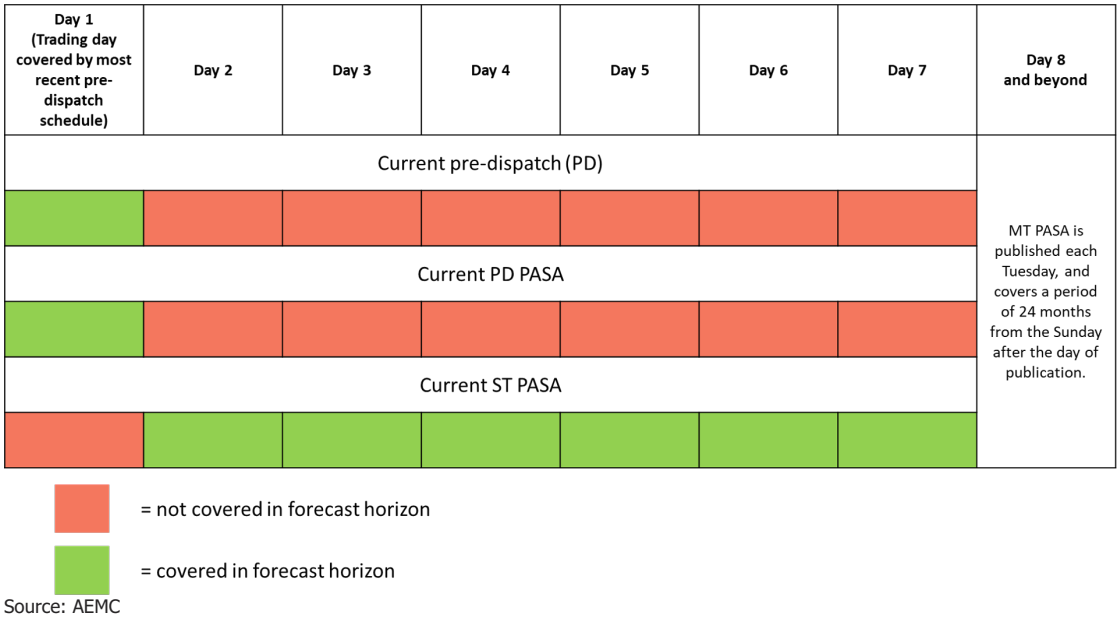
This chapter discusses stakeholder feedback, and presents the Commission's analysis and conclusions, regarding AEMO's proposal to specify that ST PASA covers the next seven days. In effect, ST PASA would subsume and include the PD PASA forecast horizon.

4.1 AEMO's proposal

In the rule change request, AEMO noted that, in practice, it publishes PD PASA in addition to ST PASA.[64] As shown in figure 4.1, PD PASA covers the pre-dispatch horizon. PD PASA and ST PASA collectively cover a seven-day period.

The key difference between pre-dispatch and PD PASA is that they are run using different models and incorporate some different information. Pre-dispatch includes information about prices, whereas PD PASA does not.[65]

Figure 4.1: AEMO's proposed changes to the ST PASA timeframes



Source: AEMC

Note: Clause 3.7.2 of the NER governs the MT PASA process. Clause 3.7.2(a) states that the medium term PASA covers the 24-month period (or, in the case of sub-paragraphs (d)(1)(i) and (f)(5) the 36-month period), commencing from the Sunday after the day of publication with daily resolution. The Spot Market Operations Timetable specifies that MT PASA is published each Tuesday. This means that in practice, the ST PASA will overlap with the information in the MT PASA for between one and six days between MT PASA publications.

64 AEMO, *Updating Short Term PASA*, rule change request, 29 June 2021, p. 8.

65 Under clause 3.8.20 of the NER, AEMO must run pre-dispatch with the resolution of one 30-minute period.

AEMO has proposed that the NER specify that ST PASA publish a forecast for the next seven days, as currently occurs in practice for the combination of PD PASA and ST PASA.[66] This will remove the inconsistency between the NER and what AEMO publishes in practice.

PD PASA is not currently specified in the NER. Clause 3.7.3(b) of the NER states that the ST PASA covers the period of six days from the end of the trading day covered by the most recently published pre-dispatch schedule with a 30-minute resolution. As shown in figure 4.1, this means that the information published in ST PASA does not cover the pre-dispatch horizon. Currently, AEMO chooses to publish PD PASA information to address this gap.

4.2 Stakeholder views

There was a mixed response from stakeholders regarding this issue.

AGL and Origin supported the combination of PD PASA and ST PASA.[67] AGL noted that the proposed rule would simply prescribe under the rules what AEMO is already forecasting through the PD PASA.

On the other hand, Shell Energy and CS Energy did not support the combination of PD PASA and ST PASA:[68]

- Shell Energy noted that by continuing to specify PD PASA and ST PASA separately, participants would avoid having to change their systems to factor in the changes compared to the existing pre-dispatch and ST PASA timeframes.
- CS Energy noted that each application has a specific utility for participants, and if there is ambiguity in the rules then it should be addressed.

4.3 Analysis

The Commission considers that there are a number of benefits associated with combining PD PASA and ST PASA. These benefits are associated with including PD PASA in the rules, given that it is not currently included. The benefits include:

- removing inconsistency between what AEMO publishes in practice and what is in the rules
- improving transparency and governance of the PD PASA process.

The Commission acknowledges the costs and risks raised by stakeholders in relation to this proposed change, including system costs associated with adjusting to a single report. The costs associated with these changes are not expected to be significant.

AEMO has confirmed that the information currently published in PD PASA is the same as the information published in ST PASA.

66 AEMO, *Updating Short Term PASA,* rule change request, 29 June 2021, p. 8.
67 Consultation paper submissions: AGL, p. 3; Origin Energy, p. 1.
68 Consultation paper submissions: Shell Energy, p. 7; CS Energy, p. 6.

4.4 Commission's position

The Commission's draft decision is to combine PD PASA and ST PASA.

The draft rule specifies that ST PASA is published over a seven-day period from the end of the most recent 30-minute period. These changes:

- remove the inconsistency that currently exists between the NER and AEMO's administration of PD PASA
- improve the transparency of the PD PASA process by subjecting it to the same requirements as the ST PASA process under the NER.

5 PUBLICATION OF GENERATOR AVAILABILITY INFORMATION ON DUID LEVEL

This chapter discusses stakeholder feedback, and presents the Commission's analysis and conclusions, regarding AEMO's proposal to publish generator availability information for each station and unit i.e. at a DUID level, rather than aggregated by region.

5.1 AEMO's proposal

The current rules specify that AEMO must publish aggregate generating unit availability and PASA availability for each region.[69]AEMO raised a number of issues with these arrangements.[70] These include:

- information asymmetry between participants with large generation portfolios and participants with small generation portfolios
- issues regarding generator availability and power system security
- inefficient scheduling decisions made by participants.

To address these issues, AEMO has proposed that the rules include a requirement to publish generator availability information on a DUID basis, or per unit level. AEMO noted that providing all market participants with this information is likely to improve the decision-making of smaller market participants with respect to the scheduling of outages.[71]

AEMO suggested that the provision of this information may have benefits in relation to power system security.[72] AEMO stated that:

- Due to increasing penetration of VRE generation in the NEM, there are increasing risks to power system security relating to inertia and system strength shortfalls. These risks are sometimes heightened during planned network outages.
- Management of these issues requires either certain individual units, a combination of certain synchronous generating units or other synchronous plant to be in service during the planned network outage.
- Transparency of generating unit availability will allow network service providers (NSP) to better coordinate their outages with other market participants.

AEMO suggested that this approach would be consistent with the approach taken in the AEMC's *Improved transparency and extending duration of MT PASA* rule change.[73]

69 See clause 3.7.3(h) of the NER.
70 AEMO, *Updating Short Term PASA,* rule change request, 29 June 2021, pp. 8-9.
71 AEMO, *Updating Short Term PASA,* rule change request, 29 June 2021, p. 8.
72 AEMO, *Updating Short Term PASA,* rule change request, 29 June 2021, p. 8.
73 AEMC, *Improving transparency and extending duration of MT PASA,* final determination, 20 February 2020, pp. 12-21.

5.2 Stakeholder views

Stakeholders were generally supportive of the publication of generator availability information for each unit or station, by DUID.[74]

The AEC noted that the publication of generator availability information by DUID will increase transparency and facilitate more efficient market outcomes.[75]

AGL noted that additional transparency will become increasingly important for market participants. It suggested that as particular generation service capabilities become scarce, and alternative system strength mechanisms become available, this more granular forecast will assist the industry in forecasting what types of generation are dispatched or directed to generate.[76]

Shell Energy suggested that any anti-competitive gaming would be readily observable. Shell considered that it would generally manifest as a lowering of available capacity and the potential for increased market intervention.[77]

Snowy Hydro noted that the AEMC should be mindful of the burden that this decision could place on some groups of market participants compared to others, given that different types of participants are subject to different requirements.[78]

Iberdrola Australia supported, in principle, AEMO's suggestion to publish individual unit's availability information to reduce information asymmetry among participants. However, it suggested that DUID-level maximum availability in the ST PASA horizon should not be published as it would be commercially sensitive and hence anti-competitive. It noted that as various units are not able to start up and ramp to full output within the five-minute period and cannot achieve adequate operational flexibility using a fast-start inflexibility profile, the maximum availability bid is required to specify that the unit is unavailable should prices increase to the market price cap.[79]

The Australian Energy Regulator (AER) raised some concerns about publishing generator availability information on a per unit level. It noted that the publication of more granular information at close to real time poses the risk of a generator exercising market power and suggested that knowledge about the shape of the merit order or supply curve can be valuable and profitable for a generator with market power.[80]

The AER also noted that, as the energy system transitions to greater levels of weather dependent renewable penetration, it is important that market systems are designed to respond to supply side events which may change at short notice. Increased ST PASA

74 Consultation paper submissions: CS Energy, p. 6; AEC, p. 2; EnergyAustralia, p. 1; AGL, p. 3; Shell Energy, pp. 5-6; SnowyHydro, p. 1; Origin Energy, p. 1.
75 Consultation paper submission: AEC, p. 2.
76 Consultation paper submission: AGL, p. 3.
77 Consultation paper submission: Shell Energy, p. 5.
78 Consultation paper submission: Snowy Hydro, p. 1.
79 Consultation paper submission: Iberdrola, p. 4.
80 Consultation paper submission: AER, pp. 1-2.

transparency may facilitate the ability of the market to forecast and respond to changes with additional flexibility and responsive capacity at short notice.[81]

5.3 Analysis

The Commission considers that there are costs, risks and benefits associated with the publication of generator availability information for every station and unit, on a DUID level.

5.3.1 Benefits of publishing DUID level generator availability information

As noted in section 3.3.1, there has been a significant increase in the penetration of variable renewable energy (VRE) generators in the NEM over the last five years. This trend is expected to continue, with VRE generators expected to compose larger portions of total electricity generated over time. VRE generators rely on variable weather conditions to generate electricity, and there is generally a non-trivial error associated with forecasting the output of these plant.[82]

In ST PASA, the forecast generation of semi-scheduled generating units is determined using the Australian Wind Energy Forecasting System (AWEFS) and the Australian Solar Energy Forecasting System (ASEFS).[83] This forecast contributes to the aggregate capacity of scheduled generation in each region, which AEMO uses during the LOR process.[84] As the proportion of variable renewable generation in the generation mix increases, it is important that the market has the appropriate information to consider the forecasting error associated with forecast available capacity into their decision to be available.

The publication of DUID-level availability may improve power system reliability outcomes over time. In addition to variability regarding weather conditions, the provision of DUID information would also provide participants knowledge of the specific energy constrained resources that contribute to the availability information. As noted in section 3.3.1, the publication of this information will be important as the penetration of BESS in the NEM continues to increase.

The publication of DUID-level availability information will provide information to the market about the potential impact of transmission constraints, as well as other constraints on the forecast market conditions. This information will allow the market to mitigate the impact of constraints in decisions regarding availability, and may improve power system reliability outcomes.

The publication of generator availability information on a DUID level will improve the scheduling of outages between participants and transmission network service providers (TNSP). TNSPs will be able to more easily understand how a planned network outage will

81 Consultation paper submission: AER, pp. 1–2.

82 Reliability Panel, *2020 Annual Market Performance Review,* final report, pp. 74-78.

83 AEMO, *Guide to intermittent generation*, pp. 4-5. https://www.aemo.com.au/-/media/files/market-it-systems/guide-to-intermittent-generation.pdf?la=en

84 AEMO, *Reserve Level Declaration Guidelines*, p. 7, https://www.aemo.com.au/-/media/Files/Electricity/NEM/Security_and_Reliability/Power_System_Ops/Reserve-Level-Declaration-Guidelines.pdf

affect the forecast power system security and reliability conditions and make adjustments, accordingly. This will lead to improved power system security and reliability outcomes.

The Commission is aware that some participants can glean information regarding the availability of generating units already through proprietary software tools. Additionally, participants have knowledge of their own outage schedules. Participants with more resources to dedicate to analysis or software, or with large portfolios and therefore more knowledge regarding outage schedules, may therefore have access to more information than participants without these two elements. The publication of generator availability information on a DUID level would remove any information asymmetries that currently exist between participants.

5.3.2 Costs and risks of publishing DUID level availability information

The Commission agrees with stakeholders there are some costs and risks associated with publishing generator availability information on a DUID level.

There is a risk that the publication of availability information for each unit and station may facilitate collusion between generators. This issue was raised in the *Improving transparency and extending duration of MT PASA* rule change.[85] The main concern of stakeholders was that by having more transparent information regarding generator availability in the MT PASA timeframe, generators would more easily be able to co-ordinate behaviour that would reduce competition.

The AEMC commissioned Houston Kemp Economists (Houston Kemp) to assess this issue. Houston Kemp noted that the provision of more detailed availability information would not increase the external stability of a collusive agreement between generators. This is because the provision of this information would provide a better indication to market participants about when they should increase supply to address any shortfall.[86]

The public provision of this information will allow for effective scrutiny by the AER.

As outlined above, stakeholders have suggested that there is a risk that the publication of more granular information at close to real time may lead to a generator exploiting its market power more often than it can under the status quo. If a generator was aware that the next most expensive generator in the merit order had limited availability, the generator may have an incentive to exercise market power by economically or physically withholding their own capacity from the market. Knowledge about the shape of the merit order curve can be valuable or profitable for a generator with market power.

There may be concerns that publishing generator availability information on a DUID level may reveal commercially sensitive information, including competitively sensitive information that may facilitate anti-competitive behaviour.

85 AEMC, *Improving transparency and extending duration of MT PASA,* draft determination, 24 October 2019, p. 13.

86 AEMC, *Improving transparency and extending duration of MT PASA,* consultant report for draft determination, 24 October 2019, pp. 5-8.

5.4 Commission's position

The Commission's draft decision is to specify that AEMO must publish the available capacity and PASA availability of individual scheduled plant and wholesale demand response units.[87]

The Commission considers that the benefits of publishing availability information on a DUID level outweigh the costs and risks.

The Commission notes that there are existing legal frameworks to mitigate anti-competitive behaviour such as collusion and misuse of market power. The ACCC is responsible for investigating and enforcing the competition provisions of the *Competition and Consumer Act 2010* (CCA).[88] In particular, the CCA prohibits:

- parties from engaging in concerted practices that have the purpose, or has or is likely to have the effect, of substantially lessening competition (section 45)
- a firm with a substantial degree of market power from engaging in conduct that has the purpose, effect, or likely effect of substantially lessening competition in a market (section 46).

The *Treasury Laws Amendment (Prohibiting Energy Market Misconduct) Act 2019* amended the CCA to give the ACCC additional powers to enforce energy market prohibitions.[89] This includes the electricity spot market prohibition which prohibits generators from manipulating the wholesale spot market (sections 153G and 153H).

The AER also has ongoing market monitoring functions, such as the wholesale electricity market performance review, that can be used to assess any changes that may occur following this rule change.[90] The AER and the ACCC will monitor whether increased transparency regarding generator availability information has a negative impact on competition.

If impacts on competition are noted during ongoing monitoring, a rule change request could be submitted to address the issues.

87 See clause 3.7.3(k)(2) and (3) in the amending rule.

88 ACCC, *Guidelines on misuse of market power,* guidelines, August 2018, p. 3.

89 Department of Industry, Science, Energy and Resources, *Prohibiting energy market misconduct,* website, June 2020, https://www.energy.gov.au/government-priorities/energy-markets/prohibiting-energy-market-misconduct.

90 AER, *Wholesale electricity market performance review 2020,* website, December 2020, https://www.aer.gov.au/wholesale-markets/performance-reporting/wholesale-electricity-market-performance-report-2020.

6 CHANGING THE DEFINITION OF PASA AVAILABILITY AND ENERGY CONSTRAINT

This chapter discusses stakeholder feedback, and presents the Commission's analysis and conclusions, regarding AEMO's proposal to change the definition of PASA availability and energy constraint in the NER.

6.1 AEMO's proposal

AEMO has proposed to make some consequential changes to two definitions in the NER as part of this rule change request.[91] The proposed changes aim to be better aligned to a principles-based approach to ST PASA by removing unnecessary prescription in the NER and allowing for the provision of relevant information to the market.

AEMO has proposed to amend the definition of energy constraint. The current definition of energy constraint in the NER is "a limitation on the ability of a generating unit or group of generating units to generate active power due to the restrictions in the availability of fuel or other necessary expendable resources such as, but not limited to, gas, coal, or water for operating turbines or for cooling".

AEMO's proposed definition of energy constraint is "a limitation on the capability of a scheduled generating unit or scheduled load to produce or consumer energy in a specified period at the level that would occur if the limitation were removed."

AEMO has argued that the current definition of energy constraint unnecessarily references the generating unit technology type by referencing different fuel sources. The proposed definition of energy constraint aligns with the definition of wholesale demand response constraint, a term that was added to the NER under the *Wholesale demand response mechanism* rule change.[92] The proposed changes include the phrase "in a specified period", which, if adopted in the final rule, should be applied to the definition of wholesale demand response constraint.

AEMO has also proposed to amend the definition of PASA availability. The current definition of PASA availability is "the physical plant capability (taking ambient weather conditions into account in the manner described in the procedure described under clause 3.7.2(g)) of a scheduled generating unit, scheduled load or scheduled network service available in a particular period, including any physical plant capability that can be made available during that period, on 24 hours' notice."

AEMO's proposed definition of PASA availability is "for a scheduled generating unit, scheduled load or scheduled network service in a given period, its available physical plant capability (taking ambient weather conditions into account), and any additional physical plant capability that can be made available during that period within a given recall period in accordance with

91 AEMO, *Updating Short Term PASA,* rule change request, 29 June 2021, pp. 23-24.

92 AEMC, *Wholesale demand response mechanism*, final determination, 11 June 2020, https://www.aemc.gov.au/rule-changes/wholesale-demand-response-mechanism.

the reliability standard implementation guidelines", and "for a wholesale demand response unit in a given period, its maximum available MW wholesale demand response, including and wholesale demand response that can be made available during that period within a given recall period in accordance with the reliability standard implementation guidelines."

6.2 Stakeholder views

6.2.1 Definition of energy constraint

Stakeholders were generally supportive of changing the definition of energy constraint.[93]

Origin Energy was supportive of the proposed definition reflecting that energy constraint applied on a per-unit level. It also suggested that the proposed definition could be further simplified for market participants.[94]

Shell Energy noted that the term "in a specified period" was not specific enough, and supported changing this phrase to refer to a trading day.[95]

6.2.2 Definition of PASA availability

Stakeholders had a mixed response to the proposed definition of PASA availability.

A number of stakeholders were supportive of changes to the definition of PASA availability.[96]

AGL noted that:[97]

- it was supportive of AEMO's intention of garnering a greater level of detail of generator recall times
- requiring recall times of less than 24 hours will pose significant challenges for market participants as it will give rise to complicated assessments of plant capability that will inevitably give rise to inconsistent interpretations of plant recall capabilities within the shorter time horizon
- the recall period should be limited to defining recall times of greater than 24 hours.

CS Energy supported redefining PASA availability to reflect the actual recall time and including PASA availability in the ST PASA process.[98]

Origin Energy noted that its preference would be for a practical and simple approach whereby participants would provide one PASA availability with one recall time for each unit per trading interval. It also noted that PASA availability is a civil penalty provision, and that the uncertainty associated with specifying return times should be reflected in any compliance requirements associated with PASA availability.[99]

93 Consultation paper submissions: Iberdrola Australia, pp. 3-4; Origin Energy, p. 2; Shell Energy, p. 8.
94 Consultation paper submission: Origin Energy, p. 2.
95 Consultation paper submission: Shell Energy, p. 8.
96 Consultation paper submissions: AGL, p. 2; CS Energy, p. 10; Origin Energy, pp. 1-2.
97 Consultation paper submissions: AGL, p. 3.
98 Consultation paper submissions: CS Energy, p. 6.
99 Consultation paper submissions: Origin Energy, pp. 1-2.

Shell Energy noted that it did not support the removal of the reference to ambient temperature conditions. It also noted that it supported a change to the recall period specified in the rules from 24 hours to 120 hours.[100]

Iberdrola Australia noted that it did not support the proposed changes the definition of PASA availability. It noted:

- there would be costs associated with requiring participants to bid a changing recall time through each trading interval
- the proposed approach would not work in practice as it would introduce a high degree of conditionality
- the proposed approach does not illustrate how coinciding works should be bid
- a count down of the recall time would be time intensive, and put undue pressure on operational staff, leading to safety issues where work is rushed to return units to avoid having to restructure a bid.

Iberdrola Australia noted that it would support a more dynamic time frame for recalls to be implemented if it was controlled with strong consultation requirements, which may involve AEMO consulting with participants to redefine the current 24-hour time frame.[101]

Alinta Energy was unclear why AEMO has proposed a change to the recall period. It noted that the recall system is difficult to use, and suggested that AEMO should redevelop their manual and set up periodic stakeholder briefing sessions to explain their system to participants.[102]

6.3 Analysis

6.3.1 Definition of energy constraint

The Commission considers that there are a number of issues related to the current definition of energy constraint. These include:

- the definition of energy constraint unnecessarily refers to fuel types
- the current definition doesn't refer to constraints on load when consuming energy

The Commission's draft decision is to change the definition of energy constraint.

6.3.2 Definition of PASA availability

The current definition of PASA availability arbitrarily defines the recall period as 24 hours. In doing so, the current definition limits the information available to the market in relation to the recall times of different plant.

Different generators will have different recall periods that may be less than or greater than 24 hours. Better reliability outcomes could be achieved by changing the definition of ST PASA

100 Consultation paper submissions: Shell Energy, p. 8.
101 Consultation paper submissions: Iberdrola Australia, pp. 3-4.
102 Consultation paper submissions: Alinta Energy, p. 2.

to reflect the actual recall time of individual plant, as this would provide more specific information to participants regarding the likely state of the market.

The Commission considers that the current definition of PASA availability can be improved and its draft decision is to change the definition of PASA availability.

6.4 Commission's position

The Commission's draft decision is to change the definitions of energy constraint and PASA availability.

The more preferable draft definition of energy constraint is:

> A limitation on the quantity of energy (expressed in MWh) that a scheduled generating unit or scheduled load can produce or consume in a specified period.

This definition:

- removes references to fuel types, and introduces a technology neutral definition
- clearly references the limitation being on energy produced over time
- includes scheduled loads as well as scheduled generators, and includes constraints on energy consumption.

The Commission considers that because energy constraint is used in different parts of the NER, with different time periods, it is not appropriate to define a time period in the NER.[103] Instead, the time period for energy constraints in the context of ST PASA should be specified by AEMO in the ST PASA procedures. By doing so:

- AEMO will have flexibility to apply energy constraints in the most effective manner regarding ST PASA
- there will be transparency in the ST PASA process, providing participants with certainty about how energy constraints are applied in the ST PASA process.

The more preferable draft definition of PASA availability is:

> For a scheduled generating unit, scheduled load or scheduled network service in a given period, its available physical plant capability (taking ambient weather conditions into account) and any additional physical plant capability that can be made available during that period within a given recall period in accordance with the reliability standard implementation guidelines.
>
> For a wholesale demand response unit in a given period, it is the maximum available MW wholesale demand response, including any wholesale demand response that can be made available during that period within a given recall period in accordance with the reliability standard implementation guidelines.

103 See clauses 3.7.2, 3.7C and 4.4.2B of the NER, respectively.

This definition:

- removes the specification of a 24-hour recall period
- allows participants to more accurately reflect the recall time of their plant within a specific horizon specified by AEMO.

The more preferable draft rule does not specify a recall period, and instead states that the relevant period for a generator's PASA availability will be outlined in the Reliability Standard Implementation Guidelines. This will enable AEMO and market participants to establish a time period that best meets the needs of participants.

7 IMPLEMENTATION

There is uncertainty regarding the commencement date of this rule. These areas are related to the implementation of the ST PASA replacement project, and include:

- availability of specialised resources
- timelines related to system changes
- relationship between implementation of ST PASA and the *Integrating energy storage systems into the NEM* rule change.

At this stage the Commission anticipates that this rule will not commence until at least quarter three 2023.

The Commission expects that a number of months will be needed for appropriate system changes and for the ST PASA procedure to be developed. The final rule will take these into account when setting the commencement date and any transitional arrangements. Participants are encouraged to provide an indication of expectations regarding timeframes in submissions to the draft determination.

The Commission acknowledges that there is some overlap between the changes proposed in this rule change and the *Integrating energy storage systems into the NEM* rule change. The *Integrating energy storage systems into the NEM* rule change final determination is being published on the same day as this draft determination. Any discrepancies between the *Updating Short Term PASA* draft rule and the *Integrating energy storage systems into the NEM* final rule will be addressed in the final determination and rule for the *Updating Short Term PASA* rule change.

ABBREVIATIONS

ACCC	Australian Competition and Consumer Commission
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
BESS	Battery energy storage system
CCA	Competition and Consumer Act 2010 (Cth)
Commission	See AEMC
DER	Distributed energy resources
DUID	Dispatchable unit identifier
ESB	Energy Security Board
FCAS	Frequency control ancillary services
LOR	Lack of reserves
MCE	Ministerial Council on Energy
NEL	National Electricity Law
NEM	National Electricty Market
NEO	National electricity objective
NER	National Electricity Rules
NSP	Network service provider
PD PASA	Pre-dispatch projected assessment of system adequacy
RDLG	Reserve level declaration guidelines
RERT	Reliability and Emergency Reserve Trader
ST PASA	Short term projected assessment of system adequacy
TNSP	Transmission network service provider
VPP	Virtual power plant
VRE	Variable renewable energy

A SUMMARY OF OTHER ISSUES RAISED IN SUBMISSIONS

This appendix sets out the issues raised in the first round of consultation on this rule change request and the AEMC's response to each issue. If an issue raised in a submission has been discussed in the main body of this document, it has not been included in this table.

Table A.1: Summary of other issues raised in submissions

STAKEHOLDER	ISSUE	AEMC RESPONSE
Alinta Energy, p. 2.	Minor or administrative change should be defined in the rules.	Minor or administrative change is a commonly used term that refers to changes such as addressing typographical and formatting errors and other non-material changes. There is no need to define it in the rules.
CS Energy, p. 2.	System adequacy needs to be defined.	There are no references to system adequacy in the proposed rule, except for the name of the process. The ST PASA process must address security and reliability.

B LEGAL REQUIREMENTS UNDER THE NEL

This appendix sets out the relevant legal requirements under the NEL for the AEMC to make this draft rule determination.

B.1 Draft rule determination

In accordance with s. 99 of the NEL the Commission has made this draft rule determination in relation to the rule proposed by AEMO.

The Commission's reasons for making this draft rule determination are set out in Chapter section 2.5.

A copy of the more preferable draft rule is attached to and published with this draft rule determination. Its key features are described in section 2.4.

B.2 Power to make the rule

The Commission is satisfied that the more preferable draft rule falls within the subject matter about which the Commission may make rules. The more preferable draft rule falls within s. 34 of the NEL as it relates to regulating: the operation of the national electricity market; the operation of the national electricity system for the purposes of the safety, security and reliability of that system; and the activities of persons (including Registered participants) participating in the national electricity market or involved in the operation of the national electricity system (s. 34(1)(a)(i), (ii) and (iii)). Further, the more preferable draft rule falls within the matters set out in Schedule 1 to the NEL as it relates to the operation of generating systems, transmission systems, distribution systems or other facilities.

B.3 Commission's considerations

In assessing the rule change request the Commission considered:

- its powers under the NEL to make the rule
- the rule change request
- submissions received during first round consultation
- the Commission's analysis as to the ways in which the proposed rule will or is likely to, contribute to the NEO.

There is no relevant Ministerial Council on Energy (MCE) statement of policy principles for this rule change request.[104]

104 Under s. 33 of the NEL the AEMC must have regard to any relevant MCE statement of policy principles in making a rule. The MCE is referenced in the AEMC's governing legislation and is a legally enduring body comprising the Federal, State and Territory Ministers responsible for energy. On 1 July 2011, the MCE was amalgamated with the Ministerial Council on Mineral and Petroleum Resources. The amalgamated council is now called the COAG Energy Council.

B.4 Civil penalties

The Commission cannot create new civil penalty provisions. However, it may recommend to the Energy Ministers Meeting that new or existing provisions of the NER be classified as civil penalty provisions.

The Commission's more preferable draft rule replaces clause 3.7.3 and modifies existing civil penalty provisions in three paragraphs within that clause. The new provisions that the Commission is recommending to the Energy Ministers Meeting as civil penalty provisions are paragraphs 3.7.3(h), (i) and (j). The new provisions reflect the content in the civil penalty provisions currently in clause 3.7.3. However, the relevant paragraphs have been simplified to reflect the principles based approach adopted in the more preferable draft rule.

Sub-paragraph 3.7.3(h)(3) was also inserted to provide AEMO with more flexibility to update the information requirements in ST PASA over time. As discussed, any additional information would need to be decided on through the *Rules consultation procedures.*

The Commission considers that the new provisions should be classified as tier one civil penalty provisions as is currently the case with the existing civil penalty provisions in clause 3.7.3. This reflects the very serious nature of a failure to comply with the new provisions whereby power system security and reliability could be at risk. The AEMC has consulted with the AER with respect to the proposed classifications.

B.5 Conduct provisions

The Commission cannot create new conduct provisions. However, it may recommend to the Energy Ministers Meeting that new or existing provisions of the NER be classified as conduct provisions.

The more preferable draft rule does not amend any rules that are currently classified as conduct provisions under the NEL or National Electricity (South Australia) Regulations. The Commission does not propose to recommend to the Energy Ministers Meeting that any of the proposed amendments made by the more preferable draft rule be classified as conduct provisions.

C LOR AND RERT FRAMEWORK

As noted in chapter 3, this appendix provides more detail regarding the existing safeguards in the rules related to AEMO's use of the LOR and RERT frameworks.

C.1 Lack of reserves framework

Clause 4.8.4B of the NER specifies that AEMO must publish a report, called the lack of reserve (LOR) framework report, within one month following the end of each calendar quarter.[105]

Clause 4.8.4B states that the purpose of the lack of reserve framework report is to inform registered participants about the implementation of the Reserve Level Declaration Guidelines (RLDG) and provide AEMO's high level analysis of how the LOR framework is operating during the relevant reporting period. Clause 4.8.4B states that each lack of reserve framework report must include for the relevant reporting period:

- AEMO's observations of any trends in when and why lack of reserve conditions are being declared under the RLDG
- a summary of the leading factors or causes of any LOR conditions declared.

The lack of reserve framework quarterly reports offer appropriate levels of transparency to monitor any use of the LOR framework. There are sufficient avenues through which changes can be made to the RLDG, most notably clause 4.8.4A (d), which specifies that AEMO may amend, and any person may submit a written request (with reasons) for AEMO to amend the RLDG from time to time.

C.2 RERT framework

Rule 3.20 of the NER contains a number of provisions to ensure that the RERT framework is used efficiently and that the processes associated with it are transparent.

Clause 3.20.3(a) states that AEMO may enter into one or more contracts to ensure that the reliability of supply in a region meets the reliability standard for the region. Clause 3.20.3(m) states that AEMO must use reasonable endeavours to ensure that the term of a reserve contract is no longer than AEMO considers is reasonably necessary to address the relevant low reserve or lack of reserve condition. It also states that the amount of reserve procured under a reserve contact is no more than AEMO considers is reasonably necessary to address the relevant low reserve or lack of reserve condition.

Clause 3.20.6 outlines a number of reporting requirements on AEMO regarding the dispatch or activation of reserves. Clause 3.20.6(a) states that if AEMO dispatches or activates reserves, AEMO must publish a report within five business days that includes details of:

- the total estimated payments made under reserve contracts

105 AEMO, *NEM Lack of Reserve Framework Quarterly Reports*, https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/system-operations/power-system-operation/nem-lack-of-reserve-framework-quarterly-reports

- the total estimated volume (in MWh) of reserves dispatched or activated under reserve contracts

Clause 3.20.6(b) states that AEMO must publish a RERT report no later than 30 business days after the end of each calendar quarter. The RERT report must contain information including but not limited to:

- AEMO's modelling, forecasts and analysis used to determine:
  - whether to enter into reserve contracts
  - the amount of reserve procured under those reserve contracts, including how those amounts were determined
- the circumstances giving rise to the need for the dispatch of scheduled reserves or activation of unscheduled reserves, including the modelling, forecasts and analysis used by AEMO to determine the need for such dispatch or activation of reserves.

Clause 3.20.7(e) states that AEMO must develop, publish and may amend from time to time in accordance with the *Rules consultation procedures*, procedures for the exercise of the RERT. These procedures must include a methodology to be used by AEMO to determine the appropriate term of a reserve contract and the amount of reserves to procure.

Clause 3.20.8 states that the Reliability Panel must develop and publish guidelines, known as the RERT guidelines.[106] The guidelines include, among other things:

- what information AEMO must take into account when deciding whether to exercise the RERT
- the relevance of the RERT principles to the exercise of the RERT

In addition to these requirements, there are other reporting processes that cover the LOR and RERT frameworks such as the annual market performance review published by the Reliability Panel.[107]

106 Reliability Panel, *Reliability and Emergency Reserve Trader Guidelines*, https://www.aemc.gov.au/market-reviews-advice/amendments-rert-guidelines-august-2020

107 Reliability Panel, *2020 Annual Market Performance Review*, pp. 57-67, https://www.aemc.gov.au/sites/default/files/2021-05/Final%20report.pdf