21 December 2017

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John
Dear ~~Mr~~ Pierce

Rule Change Proposal – Reporting of Aggregate Generation Capacity (MT PASA)

The Australian Energy Market Operator (AEMO) requests the Australian Energy Market Commission (AEMC) consider making a change to the National Electricity Rules (NER) under section 91 of the National Electricity Law.

The evolution of the National Electricity Market (NEM) has led to greater uncertainty in forecasting both the supply and demand sides of the NEM, leading to a need to redevelop the current Medium Term Projected Assessment of System Adequacy (MT PASA) methodology to maintain its effectiveness.

The redevelopment aims to provide a richer picture of power system reliability against the reliability standard by implementing a probabilistic modelling approach that better captures the uncertainties inherent in the power system of today and tomorrow. Such an approach also better reflects market dispatch and consideration of transmission limits on the reliability standard.

While the redeveloped MT PASA process remains largely compliant with the existing NEM rules, there are aspects of two clauses that are not compatible with the probabilistic approach that has been adopted in the new MT PASA process. It will no longer be possible to continue reporting all the information required under clauses 3.7.2(f)(5A) and (5B) in their current form. These clauses require AEMO to distinguish between, and separately report on, aggregate capacity of scheduled generation in a region that can and cannot be generated continuously at the PASA availability.

AEMO is proposing to remove the network constraint consideration from NER clauses 3.7.2(f)(5A) and (5B) which will have the added advantage of enabling publication of energy constrained and unconstrained information on a more transparent and regular basis.

AEMO considers there is value in identifying and reporting the aggregate capacity in a region that cannot be generated continuously due to weekly energy constraints, and not confusing this information by attempting to take a simplified approximation of network constraints into account.

The new MT PASA system, which directly simulates power system operation, will much more accurately take network constraints into account when determining reliability, and when assessing the impact of network constraints on generation dispatch and load. This information, covering a range of possible but uncertain power system conditions, will be reported under clause 3.7.2(f)(6)(v) of the Rules.

The proposed changes promote the National Electricity Objective through increased transparency and clarity. The data provided by AEMO's new probabilistic MT PASA methodology will better inform trading outcomes for participants, in turn enabling more efficient operational decisions for the market and promoting better reliability outcomes for consumers.

AEMO requests the AEMC give consideration to making these Rules as proposed.

Any queries concerning this rule change proposal should be directed to Nicola Falcon, Group Manager, Forecasting, on 03 9609 8922.

Yours sincerely

Cameron Parrotte
Executive General Manager – Strategy and Innovation

Attachments: Electricity Rule Change Proposal: Reporting of Aggregate Generation Capacity (MT PASA)

ELECTRICITY
RULE CHANGE PROPOSAL

REPORTING OF AGGREGATE GENERATION CAPACITY (MT PASA)

21 December 2017

AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

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1. SUMMARY

The Australian Energy Market Operator Limited (AEMO) requests that the Australian Energy Market Commission (AEMC) amend the National Electricity Rules (Rules) to remove the network constraint consideration requirement from clauses 3.7.2(f)(5A) and (5B). These clauses currently require AEMO to distinguish between, and separately report on, aggregate capacity of scheduled generation in a region that can and cannot be generated continuously at the Projected Assessment of System Adequacy (PASA) availability, after allowing for the impact of network constraints.

As the National Electricity Market (NEM) evolves, a progressively increasing proportion of demand is being supplied by intermittent generation sources, and consumers are more actively managing their energy purchases. As a result, variability and uncertainty are growing as features of NEM operational forecasting processes and NEM operations in general. AEMO has recognised this, and has identified limitations in some of its processes and tools, that need to be adapted to cater for the broader range of circumstances. One such tool is the Medium Term (MT) PASA, which informs decisions by registered participants and AEMO about supply, demand and transmission network outages for the coming two years.

AEMO has undertaken the MT PASA redevelopment to better align MT PASA with the evolving market. The redevelopment aims to provide a richer picture of power system reliability against the reliability standard by implementing a probabilistic modelling approach to better capture the uncertainties inherent in the power system of today and tomorrow. Such an approach also better reflects market dispatch and consideration of transmission limits on the reliability standard. AEMO's new and improved MT PASA methodology will be launched in early 2018.

The MT PASA redevelopment was informed by independent recommendations provided by Ernst and Young, and independently endorsed by GHD, to adopt a probabilistic approach. AEMO also consulted with the Reliability Panel on various aspects of the development, incorporating its feedback.

While the improved MT PASA process remains largely compliant with the existing Rules, two Rule clauses are not compatible with the probabilistic approach that has been adopted. It will no longer be possible to continue reporting all the information required under clauses 3.7.2(f)(5A) and (5B) in their current form.

This is because whether or not a particular generator will be constrained in any given period due to network limitations depends on a number of factors including the dispatch pattern across all generators, and geographical distribution of all demand and intermittent generation including intermittent generator levels and other generation dispatch, many of which are not known when the MT PASA is published.

Under the existing deterministic MT PASA methodology, a highly simplified form of network constraints is being used, along with gross approximations of intermittent generation output, to determine whether continuous generation at PASA availability may be restricted due to network constraints. These approximations do not reflect the inherent uncertainty in these attributes, and the current deterministic modelling approach is not adaptable to accommodate these factors. This poses a risk of misleading the market if an attempt is made to approximate the impact of network constraints on an aggregate capacity figure.

AEMO considers it more appropriate to assess the impact of network constraints through detailed market modelling, which the MT PASA redevelopment provides.

The new MT PASA system, which directly simulates power system operation, will much more accurately take network constraints into account when determining reliability, and when assessing the impact of network constraints on generation dispatch and load. This information, covering a range of possible but uncertain power system conditions, will be reported under clause 3.7.2(f)(6)(v) of the Rules.

During AEMO's consultation process, stakeholders expressed a preference for aggregate constrained and unconstrained capacity in a region categorised and reported solely based on whether or not weekly energy constraints are submitted in the MT PASA bids.

AEMO considers there is value in identifying and reporting the aggregate capacity in a region that cannot be generated continuously due to weekly energy constraints, and not confusing this information by attempting to take a simplified approximation of network constraints into account.

By removing the network constraint consideration from the clauses, AEMO's rule change proposal would enable the publication of energy constrained and unconstrained information on a more transparent and regular basis, in a way that is compatible with the new MT PASA. There is also potential for information to be updated more frequently in AEMO's three-hourly report, once the outcome of the rule change proposal is known.

The proposed changes promote the National Electricity Objective (NEO) through increased transparency and clarity about the way in which AEMO provides information to a market which is increasingly characterised by uncertainty in a number of key areas. The data provided by AEMO's new probabilistic MT PASA methodology will better inform trading outcomes for participants, in turn enabling more efficient operational decisions for the market and promoting better reliability outcomes for consumers.

2. RELEVANT BACKGROUND

The NEM is evolving at a rapid pace. There is an increasing proportion of demand being supplied by intermittent generation sources, and consumers are becoming increasingly active in managing their energy consumption. Consequently, it has become increasingly important for AEMO to adapt its processes and tools to maintain their effectiveness for participants in the context of the growing variability and uncertainty inherent in NEM operations. One key tool is the MT PASA process, which provides the market with an outlook of the supply-demand balance in each NEM region for each day over the next two years. The MT PASA information helps Registered Participants make forward planning and operational decisions about the operation of their plant.

2.1 Current framework

The reliability standard is a measure of the effectiveness, or sufficiency, of installed generation capacity to meet demand. It is defined in clause 3.9.3C of the Rules as the maximum expected unserved energy (USE) in a region of 0.002% of the total energy demanded in that region for a given financial year.

MT PASA assesses the adequacy of expected electricity supply to meet demand across a two-year horizon through regular assessment of any projected failure to meet the reliability standard. The MT PASA process includes a collection of information, analysis, and managed disclosure of the outlook for power system security and supply reliability that helps Registered Participants make decisions about supply, demand and transmission network outages for two years ahead.

MT PASA incorporates two separate functions:

1. Weekly publication of an assessment of supply reliability, including provision of information on demand, supply and network conditions under clause 3.7.2 of the Rules.

2. A three-hourly information service that gives a regional breakdown of the supply situation over the two-year horizon, taking into account participant submissions on availability – this is effectively a higher frequency publication of the information required to be published under clause 3.7.2(f)(5) of the Rules.

The current MT PASA process and associated Rules were developed prior to NEM start in 1998, when there was negligible intermittent wind and solar generation in the NEM and consumers were less active in managing their energy consumption, so uncertainty levels in these areas was lower than at present. However, over the years, the NEM has changed considerably in character, with more intermittent generation installed in the power system, and consumer engagement on the rise.

This evolution of the NEM has led to greater uncertainty in forecasting both the supply and demand sides of the NEM, leading to a need to reassess the current MT PASA methodology to maintain its effectiveness and thereby improve the decision making of stakeholders and AEMO.

2.2 Current MT PASA Process

Clause 3.7.2(a) of the Rules specifies that “every week, AEMO must review and publish the outputs of the medium term PASA in accordance with the timetable”. The relevant MT PASA outputs are stipulated in clause 3.7.2(f) of the Rules. Some of these outputs, which can be calculated without market modelling, are provided by AEMO through the high-frequency three-hourly report, consistent with stakeholder

requests a number of years ago. Conversely, outputs that can only be derived from market modelling are published weekly, consistent with the minimum Rules requirement.

The information required to be published under clause 3.7.2(f)(5) of the Rules can be calculated using a simple arithmetic addition of PASA availability in each region, as provided by participants, and is therefore able to be published in AEMO's three hourly report. The information required under clauses (5A) and (5B) however, requires some modelling to assess the impact of network constraints and can therefore not be updated as frequently. This information is currently calculated using a simplified form of network constraints, along with gross approximations of intermittent generation availability, and is published with other weekly MT PASA outputs.

2.3 MT PASA Redevelopment

In 2016, AEMO began the MT PASA redevelopment as part of an ongoing process of continuous improvement, and to ensure the process used to assess the outlook against the reliability standard is robust in light of the changing generation mix. The redevelopment will replace the existing deterministic methodology with a probabilistic approach that can better capture the implications of intermittent generation on supply adequacy amongst other improvements. Stage 1 included:

- Formally consulting with stakeholders to understand the limitations of the current methodology, considering both AEMO systems and those of stakeholders, and the value of MT PASA information.
- Proposing alternative methodologies that address known and emerging issues and meet the NEO and MT PASA objectives.
- Identifying potential solutions for implementation.

External consultants, Ernst & Young (EY), were engaged in Stage 1 to assess whether current MT PASA processes were fit for purpose and to provide a suite of recommendations to address gaps. In the final report, EY recommended AEMO should implement the MT PASA reliability assessment using a probabilistic modelling approach to better capture the impact of stochastic inputs such as demand, generation outages or availability of intermittent generation. The reliability standard is probabilistic, and therefore it is appropriate to capture the distribution of outcomes under a range of possible supply and demand conditions when determining the expected level of unserved energy.

EY's recommended solution was independently assessed by GHD through a gap analysis of the recommendation, and review of information on relevant international practices. GHD concluded that EY's solution could address the identified limitations and issues with the existing MT PASA.

In Stage 2, AEMO carried out consultation and development of the preferred option.

Stakeholders participated in both stages of the review process through two workshops held in May and December 2016, and generally supported the proposed changes.

As further background for this proposal, more information on the MT PASA redevelopment, the consultant reports and AEMO's review process can be found on AEMO's website[1]. Further workshops were held in

[1] For links to the consultant reports and current MT PASA methodology please see the Medium Term PASA section on AEMO's website at https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Data/Market-Management-System-MMS/Projected-Assessment-of-System-Adequacy

2017 as part of the Reliability Standard implementation Guidelines (RSIG) consultation, as discussed in next section.

The redeveloped MT PASA is currently scheduled to be published in early 2018.

The new MT PASA system, which probabilistically assesses the risk and uncertainties of power system operation, will model network constraints much more comprehensively than the current deterministic process when assessing supply reliability against the NEM reliability standard. The new MT PASA process will be carried out at least weekly using two different model runs:

1. Reliability Run - to identify and quantify potential reliability standard breaches, project violations of power system security (by assessing potential constraint violations) and identify when and where network constraints may become binding on the dispatch of generation or load. These outputs are all requirements of clause 3.7.2(f)(6), and are not the subject of this Rule change proposal.

2. Loss of Load Probability Run - to assess days most at risk of load shedding.

The MT PASA Reliability Run implements the reliability standard by assessing the level of unserved energy and evaluating the likelihood of reliability standard breaches through probabilistic modelling. The expected level of unserved energy is determined by assessing supply adequacy under a large number of variable demand and intermittent generation supply conditions, to reflect power system uncertainties that are driven by different weather conditions or generation outages.

As the reliability standard is a measure of the annual USE expectation, the MT PASA Reliability Run focuses on simulating realistic load and intermittent generation profiles chronologically over the year, and potential correlations are captured. The profiles are based on historical weather conditions, as weather drives both demand and intermittent generation availability at any point in time. However, this unavoidably requires assumptions to be made about precisely when the maximum demand, low wind conditions, or cloudy days could occur in any given sample, based on historical observation, even though it is impossible to predict timing of these weather events two years into the future.

The Loss of Load Probability Run is therefore designed to better inform participants of more or less favourable windows to schedule maintenance by looking at the risk of USE on any given day, assuming that extreme weather conditions were to occur on that day. While this highlights the risks of load shedding and encourages maintenance to be scheduled in low risk periods, it is unable to assess the reliability standard as it would not be reasonable to assume that extreme weather conditions were to occur on every day of a year.

AEMO considers that these two runs, in combination, provide greatest value, allowing participants to make forward planning and operational decisions about the operation of their plant, whilst also assessing whether additional supply or demand response is required to reduce the risk of reliability standard breaches.

More details of the two MT PASA runs are provided in the MT PASA process document[2].

2.4 Reliability Standard Implementation Guidelines Consultation

The RSIG are developed and issued by AEMO to detail how the NEM reliability standard is applied in various NEM processes including MT PASA. As part of the MT PASA redevelopment project, AEMO conducted a public consultation on the RSIG to adapt it to the new probabilistic approach used in the redeveloped MT PASA. The RSIG consultation process commenced on 30 March 2017.

The consultation targeted market participants and other stakeholders that provide inputs to MT PASA and use information from it. AEMO consulted specifically with the Reliability Panel on the RSIG and their feedback was a key input into the process. AEMO also consulted with industry stakeholders at its Forecasting and Planning Reference Group meetings. Information relating to this consultation is publically available on AEMO's website and forms the background to this proposal[3].

Amongst the issues considered during the consultation, AEMO requested feedback on a proposal to produce two sets of MT PASA runs:

MT PASA Dispatch Run – to be executed weekly with and without planned network outages. This assessment would be used to identify and quantify most MT PASA outputs.

MT PASA Reliability Run – to be executed monthly using around 2,000 Monte Carlo simulations to assess the likelihood of reliability standard breaches. From this Reliability Run, AEMO would also indicate the days most at risk of supply shortfalls

After taking into account feedback from the submissions and internal testing, AEMO decided to run the probabilistic Reliability Run weekly, rather than monthly, removing the need for a Dispatch Run and the additional Loss of Load Probability (LOLP) run was included.

2.5 Other material issues consulted on

EY were engaged to assess whether MT PASA processes were fit for purpose and to provide a suite of recommendations to remediate the gaps. AEMO used EY's recommendations as a basis to consult with stakeholder during the MT PASA review workshops and the RSIG Consultation. Issues included changes to probabilistic modelling processes, frequency of regular runs and reference years. AEMO also sought responses from participants about whether more granular reporting of aggregate generation would help participants make efficient operational and planning decisions and promote the national electricity objective.

More granular reporting of PASA availability could range from merely distinguishing between energy constrained and unconstrained generation (and separately reporting forecasts of variable renewable generation) through to identifying each bid by Dispatchable Unit Identifier (DUID).

[2] http://www.aemo.com.au/-/media/Files/Stakeholder_Consultation/Consultations/Electricity_Consultations/2017/MTPASA/MT_PASA_Process_Description---Final-Version.pdf
[3] Link to AEMO consultation website http://aemo.com.au/Stakeholder-Consultation/Consultations/Reliability-Standard-Implementation-Guidelines-Consultation

EY recommended that:

"Distinguishing between categories of plant that behave very differently in the published results (particularly controllable plant, wind and solar) is likely to be worthwhile if practical as the distinction is important for planning purposes. In our stakeholder engagement, some participants also expressed interest in AEMO publishing individual generator availability as opposed to regional aggregates. This is likely to be valuable information but may raise confidentiality concerns and would be best handled through the AEMC rule change process as an issue separate to MTPASA reform."

For planning purposes, AEMO also considers that there is value in distinguishing between availability of categories of plant that behave very differently. If the majority of plant available in a region were variable renewable generation sources, or energy constrained, there is greater uncertainty associated with actual availability on any given day.

AEMO is obligated to take reasonable measures to protect information classified under the Rules as confidential, such as individual DUID bids. Even when merely distinguishing between energy constrained and unconstrained PASA availability in aggregate, there is a small, but not negligible, risk that individual bids could be derived from the aggregates if there were few generators in a particular category within a region.

AEMO therefore concurs with EY that a rule change is necessary to allow this information to be published since currently constrained capacity reported in clause 3.7.2(f)(5B) includes a highly simplified approximation of capacity constrained due to network constraints. There is no way for participants to ascertain whether the reported capacity is constrained due to network constraints or energy constraints, or both. Moreover, the approximations made to assess capacity constrained due to network constraints do not reflect the inherent uncertainty in the power system, posing a risk of misleading the market if an attempt is made to approximate the impact of network constraints on an aggregate capacity figure.

Consequently, as a precursor to this rule change proposal, AEMO used the RSIG consultation process to assess the value of the information provided in clauses 3.7.2(f)(5A) and (5B), and test whether this value would increase, and promote the NEO, if published more frequently without consideration of network constraints.

Participant opinions differed on this, with some stakeholders requesting reporting of generator availability down to a DUID basis to remove asymmetry of information between participants. In particular, concerns were raised that currently individual DUID data on availability is generally only known between major NEM participants due to their sharing of plant overhaul resources, specialist contractors and strategic spares.[4] By correcting this information imbalance, participants suggested that changes would allow informed choice and risk management by smaller NEM participants and their intermediaries leading to lower prices for consumers. On the other side, it was argued that while there was an asymmetry of information, this was not enough to justify publication down to DUID level[5].

[4] See First stage Submission from ERM Power, http://www.aemo.com.au/Stakeholder-Consultation/Consultations/Reliability-Standard-Implementation-Guidelines-Consultation
[5] Second stage consultation submission from Energy Australia: http://www.aemo.com.au/Stakeholder-Consultation/Consultations/Reliability-Standard-Implementation-Guidelines-Consultation

During consultation, at least one stakeholder explicitly requested that AEMO provide forecast energy constrained and energy unconstrained generation availability data on an aggregate regional basis, without including the impact of network constraints on generation availability. Stakeholders also expressed concerns that the inclusion of network constraints in the reporting of information in clauses 3.7.2(f)(5A) and (5B) reduced transparency.

In its Final Determination and Report[6] published on 15 August 2017, AEMO noted that following further assessment of the obligation, AEMO considered that discussion of the merits of increasing the granular reporting of generation availability data, without consideration of network constraints, was secondary to a more fundamental question of how the information could be reliably calculated under the new MT PASA methodology.

Specifically, determining the impact of network constraints on aggregate capacity, as required by clauses 3.7.2(f) (5A) and (5B) is not practical in the context of the probabilistic modelling approach now adopted. This is because whether or not a generator will be constrained in any given period due to network limitations depends on a number of factors including the dispatch pattern across all generators, and geographical distribution of all demand and intermittent generation including intermittent generator levels and other generation dispatch, which are not known when the MT PASA is published.

To address this, AEMO noted its intention to propose a Rule change to remove the network constraint consideration.

2.6 Network Constraints and the new MT PASA Process

With increasing levels of renewable generation, there is now more uncertainty in the power system than ever before, and making gross approximations of network constraints and intermittent generation availability purports a level of accuracy in the assessment of clauses 3.7.2(f) (5A) and (5B) that could mislead the market. Whether or not generation capacity is constrained due to network constraints is dynamic, and depends on the current status of system, including the level of output from each dispatchable and renewable generator, the geographic distribution of demand, and other key factors at any point in time.

AEMO considers that the impact of network constraints will be more accurately taken into account by the MT PASA redevelopment in the various modelling runs discussed above.

The new MT PASA system, which directly simulates power system operation, will much more accurately take network constraints into account when determining reliability, and when assessing the impact of network constraints on generation dispatch and load. This information, covering a range of possible but uncertain power system conditions, will be reported under clause 3.7.2(f)(6)(v) of the Rules.

[6] See Appendix 2 for AEMO's Final Report and Determination on the Reliability Standard Implementation Guidelines.

3. STATEMENT OF ISSUE

3.1 Current Rules

Under clause 3.7.2(f)(5A) and (5B), AEMO is required to publish:

> (5A) aggregate capacity for each *region*, after allowing for the impact of *network constraints*, that can be *generated* continuously, calculated by adding the following categories:
>
> (i) the capacity of *scheduled generating units* in the *region* that are able to operate at the *PASA availability*; and
> (ii) the forecast *generation of semi-scheduled generating units* in the *region* as provided by the *unconstrained intermittent generation forecasts*;
>
> (5B) aggregate capacity for each *region*, after allowing for the impact of *network constraints*, that cannot be *generated* continuously at the *PASA availability* of the *scheduled generating units* in the *region* due to specified weekly *energy constraints*.

In other words, clauses 3.7.2(f)(5A) and (5B) require AEMO to distinguish between, and separately report on, aggregate capacity of scheduled generation in a region that can and cannot be generated continuously at the PASA availability. When categorising constrained and unconstrained plant, the Rules require AEMO to take into account both the impact of weekly energy constraints on individual plants, and the impact of network constraints on the combined plants across the region.

3.2 Issues with the current Rule

In developing the new MT PASA methodology, the output reports have been designed to satisfy, as far as possible, the requirements of clauses 3.7.2(f)(5A) and (5B), however assessment of the impact of network constraints in this context is not practical, and is incompatible with the probabilistic modelling approach that will now be adopted in the redeveloped MT PASA.

As explained in section 2.6 this is because whether or not a generator will be constrained in any given period due to network limitations depends on a number of factors including the dispatch pattern across all generators, the geographical distribution of demand across each NEM region, and the geographical and temporal distribution of intermittent generation, as well as other generation outages. The aggregate capacity that may or may not be constrained can no longer be calculated without making gross deterministic approximations of all of these uncertain attributes, which would be inconsistent with the variable assumptions used in the probabilistic modelling.

As a result, AEMO considers that any attempt to approximate the impact of network constraints into the information published under clauses 3.7.2(f)(5A) and (5B) would risk misinforming the market and other users of the MT PASA.

Accordingly, the redeveloped MT PASA remains largely compliant with the existing Rules, with the exception of the network constraints portion of these two Rule clauses that cannot be complied with, while still providing probabilistic reliability information that meets the needs of stakeholders.

If the Rule obligation is clarified to allow AEMO to report energy constrained and unconstrained information without confusing this information by attempting to take a simplified approximation of network constraints into account, then AEMO would consider including the information required to be published under clauses 3.7.2(f)(5A) and (5B), in its three hourly reporting cycle. Stakeholders have advised that reporting this information in a timelier manner adds value as it better informs the operational decisions they are making on a continual basis, many of which have implications for reliability.

4. PROPOSED RULE

4.1 Description of the proposed Rule

AEMO requests that the Australian Energy Market Commission (AEMC) amend the National Electricity Rules to remove the network constraint consideration requirement from clauses 3.7.2(f)(5A) and (5B). AEMO's suggested changes are outlined in Section 7.

4.2 How the proposal will address the issues

Increasing levels of uncertainty inherent in the operation of the power system has driven a move away from using a deterministic methodology for the MT PASA process. Extensive consultation with stakeholders during the PASA redevelopment project indicates that the value of the information reported in clauses 3.7.2(f)(5A) and (5B) would be improved by not attempting to make any approximation of the impact of network constraints in that context. Indeed, the consultation has not arrived at any meaningful way of taking network constraints into account when working with a subset of the supply side data as required by these Rule clauses.

Removal of the network constraint consideration from these clauses will allow AEMO to publish aggregate supply side information taking into account energy constraints, without devaluing that information through any attempts to meet the impractical network constraint obligation currently appearing in the subject clauses. AEMO's consultation with stakeholders has reinforced that this approach would better meet their needs than any other approach, however inconsistency with the current Rules remains an issue.

AEMO therefore contends that removal of the network constraint considerations from clauses 3.7.2(f)(5A) and (5B) would facilitate the publication of information that better informs the planning and operational decisions participants need to make in relation to their generation and load facilities.

4.3 Transitional matters

As an interim measure to address AEMO's issues with being unable to comply with these requirements once the new MT PASA methodology is operational, AEMO has been in discussion with the Australian Energy Regulator. As a result of this, AEMO will be providing the AER with a request for a Letter of No Action for its relevant obligations under 3.7.2(f)(5A) and (5B) in parallel with this rule change proposal submission.

AEMO considers that the value of the reliability information that will be provided through the redeveloped MT PASA warrants this transitional approach. Otherwise, the MT PASA redevelopment would not be able to be implemented until the matters raised in this rule change proposal are resolved.

5. HOW THE PROPOSED RULE CONTRIBUTES TO THE NATIONAL ELECTRICITY OBJECTIVE (NEO)

The proposed changes promote the National Electricity Objective through increased transparency and clarity about the way in which AEMO provides information to a market which is now characterised by increasing uncertainty in a number of key areas. The data provided by AEMO's new probabilistic MT PASA methodology will better inform trading outcomes for participants, enabling more efficient operational decisions for the market and promoting better reliability outcomes for consumers.

AEMO also considers there is value in identifying and reporting the aggregate capacity in a region that cannot be generated continuously due to weekly energy constraints, and not confusing this information by attempting to take a simplified approximation of network constraints into account.

By removing the network constraint consideration from the clauses, AEMO's rule change proposal would enable the publication of energy constrained and unconstrained information on a more transparent and regular basis, in a way that is compatible with the redeveloped MT PASA. There is also potential for information to be updated more frequently in AEMO's three-hourly report, once the outcome of the rule change proposal is known. From a planning perspective, more frequent and transparent provision of information allows participants to make more informed decisions about the operation of the market and their risk management practices, in the long term interest of consumers.

6. EXPECTED BENEFITS AND COSTS OF THE PROPOSED RULE

AEMO does not anticipate any adverse operational or market impacts from the proposed changes. Any incremental system cost will be minimal. On balance, AEMO considers that the benefits associated with the MT PASA redevelopment outweigh any cost associated with this proposed rule change. In the context of clauses 3.7.2(f)(5A) and (5B), assessment of the impact of network constraints is incompatible with the improved probabilistic modelling approach now adopted.

The introduction of the new MT PASA probabilistic methodology is the result of a two year project involving significant industry consultation. Software and processes have been built that remain rule compliant aside from those that cannot practically be achieved given that the power system is inherently uncertain. Stakeholders are supportive of AEMO's MT PASA changes, with feedback indicating the new method will produce more reliable information and assist in identifying and taking action on system adequacy issues.

The information provided through the MT PASA process underpins planning and operational decisions by participants regarding such matters as the scheduling of plant outages for maintenance, fuel sourcing, and plant operating strategies.

With the MT PASA redevelopment, AEMO will provide more reliable information to the market which in turn allows participants to make efficient decisions about the operation of their plant in the context of the market and their risk management practices, which is in the long term interests of consumers with respect to price, reliability and security of supply of electricity.

7. DRAFT RULE

This draft is based on version 103 of the National Electricity Rules.

Reference	Rule as current	Change
3.7.2 (f)	AEMO must prepare and publish the following information in respect of each day (unless otherwise specified in subparagraphs (1) to (6)) covered by the medium term PASA in accordance with clause 3.13.4(a): (5) aggregate *generating unit PASA availability* for each *region*; (5A) aggregate capacity for each *region*, after allowing for the impact of *network constraints*, that can be *generated* continuously, calculated by adding the following categories: (i) the capacity of *scheduled generating units* in the *region* that are able to operate at the *PASA availability*; and (ii) the forecast *generation of semi-scheduled generating units* in the *region* as provided by the *unconstrained intermittent generation forecasts*; (5B) aggregate capacity for each *region*, after allowing for the impact of *network constraints*, that cannot be *generated* continuously at the *PASA availability* of the *scheduled generating units* in the *region* due to specified weekly *energy constraints*;	(5A) aggregate capacity for each *region*, ~~after allowing for the impact of *network constraints*,~~ that can be *generated* continuously, calculated by adding the following categories: (i) the capacity of *scheduled generating units* in the *region* that are able to operate at the *PASA availability*; and (ii) the forecast *generation of semi-scheduled generating units* in the *region* as provided by the *unconstrained intermittent generation forecasts*; (5B) aggregate capacity for each *region*, ~~after allowing for the impact of *network constraints*,~~ that cannot be *generated* continuously at the *PASA availability* of the *scheduled generating units* in the *region* due to specified weekly *energy constraints*;