NATIONAL ELECTRICITY RULE REQUEST - NEW PRUDENTIAL STANDARD AND FRAMEWORK

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1 Summary

AEMO requests a Rule to establish a clear prudential standard for the national electricity market (NEM). AEMO proposes that the “reasonable worst case” definition in the National Electricity Rules (NER) should be replaced with a prudential standard of 2% probability of loss given default (LGD).This proposed prudential standard has been based on empirical evidence of the NEM’s historical performance. Additionally, AEMO proposes that existing clause 3.3.8 and schedule 3.3 of the NER be replaced with a new clause 3.3.8 that requires AEMO to develop a new methodology to determine the minimum amount of credit support a retailer[1] must provide to AEMO to meet the proposed prudential standard. This would also require AEMO to review the effectiveness of the methodology to measure its performance against the proposed prudential standard and publish a report annually detailing the findings and recommendations for the improvement of the methodology.

This request arises from one of the key recommendations of AEMO’s 2010 Energy Market Prudential Readiness Review (“Prudential Readiness Review”). AEMO considers that the proposed Rule and consequential changes to the methodology would result in overall benefits to the NEM through an improved prudential framework. A clear prudential standard and the proposed framework would make the risk allocation between generators and retailers more transparent and this would increase regulatory certainty in the operation of the NEM’s prudential arrangements. In turn, this would promote confidence in the NEM, and the operation of the proposed framework would encourage retailers to manage the credit risk that arises from trading in the NEM more prudently while reducing their long term costs of operating in the NEM.

2 The Scope of the Rule Request

The scope of this Rule request has been confined to the Prudential Readiness Review’s recommendation to establish a clear prudential standard for the NEM and the associated changes necessary to the prudential framework. This review and the AEMC’s review into the role of hedging contracts in the existing NEM prudential framework (“Hedging Review”) included further recommendations to improve the NEM’s prudential framework. While those recommendations are important, AEMO considers that establishing a clear prudential standard and framework is

[1] While there are a range of Market Participants who could either owe money to, or be owed money by AEMO in respect of NEM transactions, for convenience throughout this document the terms “retailer(s)” and “generator(s)” are used generically as follows:

- retailer(s) refer to Market Participants that owe money to AEMO, as they tend to be net debtors in the NEM.
- generator(s) to refer to Market Participants that AEMO owes money to, as they tend to be net creditors in the NEM.

paramount and should be pursued before further efficiency gains are sought. This would ensure future changes are based on a solid and well understood foundation.

AEMO understands that the Ministerial Council on Energy (MCE) is considering the recommendations arising from the Hedging Review. The major elements of AEMO's recommended work program on the findings of the Prudential Readiness Review are included in Section 3.3.2.

3 Relevant Background

3.1 Credit risk in the NEM

Chapter 3 of the NER establishes the NEM's prudential and settlement framework to manage the credit risk that arises from electricity being traded in the NEM, with the potential for a retailer to fail to meet its payment obligations under the NER.[2] The goal of credit risk management under the prudential arrangements is to provide surety of payment to generators to an accepted degree of confidence. This is achieved by requiring retailers to provide an appropriate level of credit support in accordance with the NER and the credit limits methodology.[3]

The NEM's prudential arrangements see AEMO as a principal in the settlement of financial transactions, generators as the net creditors, and retailers as the net debtors. Under this framework, beyond establishing whether a retailer meets the acceptable credit criteria in clause 3.3.3 of the NER, AEMO does not assess the credit worthiness of retailers. Instead, retailers must provide AEMO with credit support in the form of an unconditional bank guarantee from a financial institution sufficient to mitigate the credit risk that arises from the retailer's operating in the NEM.[4] If the credit support provided is insufficient, a security deposit can be provided to AEMO to maintain a defined buffer known as the prudential margin (PM).

Broadly, two key factors determine the level of credit risk that a retailer poses to the NEM: the volatility of the amount and value of the electricity traded, and the credit period until these amounts are settled. Electricity prices and, to a lesser extent, loads can be volatile, which causes the credit risk of retailers to fluctuate, while the credit period for each billing period is relatively stable (not accounting for public holiday periods).

3.2 The current prudential arrangements

Under the NEM's current prudential arrangements, retailers provide AEMO with credit support to cover estimates of future liabilities likely to be owed with respect to the amount of electricity traded

[2] Note that the current prudential arrangements are not intended to mitigate all the credit risk that arises from trading in the NEM.

[3] This has been adapted without loss of fidelity from the Bank of International Settlements' (BIS') credit risk definition: "…the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms. The goal of credit risk management is to maximise a bank's risk-adjusted rate of return by maintaining credit risk exposure within acceptable parameters." Note that, in the context of this definition, retailers are "counterparties". AEMO is the principal in the settlement of NEM transactions and its goal is to maintain retailers' credit risk exposure within the parameters indicated by the NER.

[4] Financial institutions are responsible for assessing the credit risk associated with providing a bank guarantee. This occurs independently of the NEM's prudential arrangements.

over the key periods of time as set out in the NER. In effect, this mitigates the credit risk retailers pose to the NEM, but is not intended to eliminate it. The prudential arrangements provide a degree of certainty of payment to generators in the event that a retailer does not meet its payment obligations. If a default on payment occurs, and the credit support held by AEMO for that retailer is insufficient to cover the default, the resultant short payment is pro-rated across generators.[5]

AEMO is required to determine a maximum credit limit (MCL) and PM for each Market Participant in accordance with a methodology based on the principles included in schedule 3.3 of the NER.[6] Retailers must provide AEMO with credit support that meets the determined MCL amount. These prudential arrangements have been designed to mitigate the need for generators to factor risk premiums into their bids, which would be reflected in the spot price and, hence, the wholesale price of electricity sold to retailers.

Currently, the degree of credit risk that the prudential arrangements is intended to cover is to a “reasonable worst case” estimate. The NER defines “reasonable worst case” as:

> A position that, whilst not being impossible, is to a probability level that the estimate would not be exceeded more than once in 48 months.

Both the MCL and PM are currently determined by AEMO in accordance with the credit limits methodology to meet AEMO’s interpretation of the “reasonable worst case” estimate. The MCL represents the minimum amount of credit support a retailer must provide to AEMO. The PM relates to the reaction period of seven days, which is an allowance for the time it might take to suspend a retailer from trading in the NEM, taking into account the NER requirements and the potential for weekends and public holidays to lengthen the process.[7,8] In practice, the PM represents a buffer below the amount of credit support that a retailer provides, to establish a trading limit for the retailer. If the retailer’s market exposure (or outstandings) exceeds its trading limit, this triggers intervention by AEMO and can lead to suspension of that retailer if not remedied.

The length of the credit period is the number of days from the start of a billing period until the end of the reaction period, this time period includes the number of days in past billing periods, the current week and the reaction period.[9] This is illustrated in Figure 1.

[5] Refer to clause 3.15.22 of the NER.

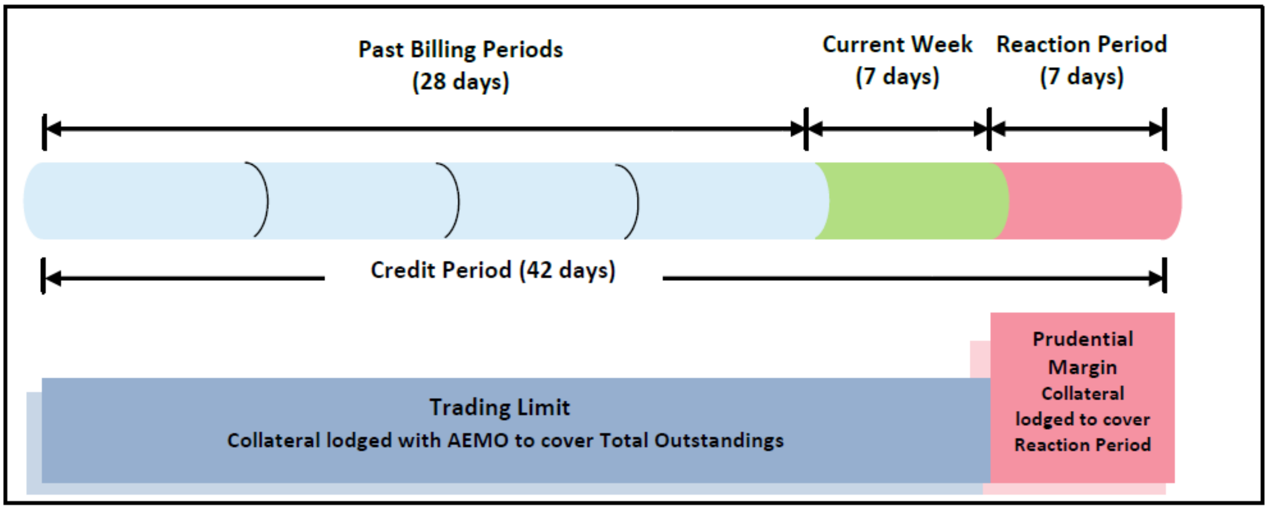
[6] This is the credit limits methodology that can be found at: http://www.aemo.com.au/electricityops/0530-0019.pdf.

[7] The credit limit methodology calculates the reaction period over seven days.

[8] Under schedule 3.3.2, if the aggregate expected trading amount or reallocation amount is a positive amount. The PM does not take these into account. Note, the credit limit methodology calculates the reaction period over seven days.

[9] The length of the credit period is currently defined in schedule 3.3.1(b)(6), as is the reaction period.

Figure 1: NEM Prudential Settlement and Timelines



Source: Prudential Readiness Review – Final Report to the MCE, p.12.

3.2.1 The calculation of the MCL and PM

The NER does not prescribe the formulae for determining the MCL and PM. Schedule 3.3 of the NER specifies the principles for calculating both these quantities. AEMO has consulted with Market Participants in developing the credit limits methodology, which sets out the procedure for determining both the MCL and PM. In summary, the calculation of the MCL takes into account the following key components:

- A Market Participant's average daily trading behaviour in the NEM. This includes electricity purchases, generation sales and ex-ante reallocation transactions. Due to the immateriality of historic ancillary services costs in comparison to energy transactions, these are not taken into consideration.
- For estimated amounts due to electricity purchases and reallocation debits, the MCL is calculated over the credit period which is 42 days, or 28 days if the Market Participant has made an application to use a reduced MCL.
- The average regional reference price for each region.
- A volatility factor per region, which is used as a scaling factor to derive the "reasonable worst case" value based on historical maximum and average values of outstandings in a 42-day moving window. The prior 12 months of data is used for this assessment.
- Prospective energy, dollar, swap and cap reallocations.[10]
- Other scaling factors to derive more accurate estimates of trading amounts, such as a deemed loss factor and goods and services tax (GST).
- An adjustment to the MCL to reflect situations where a Market Participant has credit amounts in one region and debit amounts in a different region.

[10] The MCL methodology does not currently take swap and collar reallocations into account, but will do so if and when the Australian Securities and Investment Commission (ASIC) grants AEMO's current application for an exemption from holding a clearing and settlement facility licence for this purpose.

Where AEMO determines a negative MCL value for a Market Participant, this is considered to be a zero value and no credit support is required. Generally, this occurs in the case of generators because they tend to be net creditors in the NEM.

The methodology AEMO uses to determine the PM takes into account similar components except:

- Only a Market Participant's net debit amounts for energy and reallocations are considered.
- It is an estimate for the reaction period, being seven days.[11]

Further information on the credit limits methodology can be obtained from AEMO's website.[12]

3.3 Consultations addressing the NEM's prudential framework

Prior to submission of this Rule request, the AEMC and AEMO have each undertaken reviews that considered the NEM's prudential framework and analysed the current prudential standard; the following sections summarise their key findings regarding the prudential standard.

3.3.1 The AEMC's Hedging Review

On 27 July 2010, the AEMC published the final report from its Hedging Review, where it considered the NEM's current prudential arrangements and the NER's "reasonable worst case" definition. Regarding the current prudential arrangements, stakeholders raised concerns that the reduced MCL might not achieve adequate credit support, the provisioning for the PM might not be adequate while a defaulting party is being suspended from trading in the NEM, and that the "reasonable worst case" definition should be clarified to allow for a proper evaluation of the methodologies.

Ultimately, the AEMC concluded that its analysis in clarifying the "reasonable worst case" definition was inconclusive. Among other things, the AEMC recommended AEMO's Prudential Readiness Review consider establishing a PM for the prudential arrangements that meets the "reasonable worst case" definition (or other appropriately established performance target) for trading amounts over the reaction period. The AEMC stated that because the calculation of the PM is calculated using the volatility factor for a 42 day rather than seven day period, the current prudential margin might not reflect the "reasonable worst case" estimate.[13] This issue would be addressed under the proposed Rule through applying different volatility factors as part of a revised methodology for calculation of the MCL (see also Section 4.2).

For further information on the Hedging Review refer to the AEMC's website.[14]

3.3.2 AEMO's Prudential Readiness Review

On 27 April 2011, AEMO published its Final Report on the Prudential Readiness Review. This review was requested by the MCE to identify the risks and issues under the current prudential

[11] For further information refer to schedule 3.3.2 of the NER.
[12] http://www.aemo.com.au/electricityops/0530-0019.pdf.
[13] ibid., p. 142.
[14] For further information refer to: http://www.aemc.gov.au/Market-Reviews/Completed/Review-into-the-Role-of-Hedging-Contracts-in-the-Existing-NEM-Prudential-Framework.html.

framework and, where feasible, identify measures to address them. As a first step, AEMO established the industry based Settlement and Prudential Reference Group (SPRG), to focus on identifying issues and options for the improvement of current settlement and prudential arrangements.[15]

AEMO also commissioned advice from consultants Seed Advisory and actuaries Taylor Fry to assist in understanding the historic performance of the NEM's prudential standard, and economic advice from the Competition Economics Group (CEG) on assessing options for change against the National Electricity Objective (NEO).[16]

The review identified a number of material improvements to the prudential arrangements and recommended the following work program, in order of sequence:

1. Establishment of a new NEM prudential standard and MCL methodology.
2. Investigation of the viability of a number of additional options for Market Participants to use in meeting their prudential obligations.
3. An investigation of alternative arrangements for settlements and prudential arrangements.
4. A further examination of measures to deliver a shorter settlement cycle.

This Rule request addresses the first priority in the work program. For further information on this review refer to AEMO's website.[17]

4 Statement of Issues

AEMO considers that the "reasonable worst case" definition is unclear and the current prudential arrangements do not adequately take into account the credit risk that retailers pose to the NEM. Some of the principles in schedule 3.3.1 of the NER for determining the MCL are unclear and some redundant, this is discussed further in Table 1 in Section 6.1.1. Further, the current prudential arrangements could be improved by including relevant factors that affect the credit risk retailers pose to the NEM in the methodology used to determine the MCL, while also improving the process for determination of the MCL.

4.1 Reasonable worst case definition

The "reasonable worst case" definition remains unclear despite the attempts of the Hedging Review to clarify it. Further, as confirmed by Seed Advisory and Taylor Fry's analysis, the original risk allocation has significantly changed over time due to the introduction of the reduced MCL provisions in the NER.

It is important to have a prudential standard that unambiguously indicates the risk allocation between retailers and generators, that is, the degree of credit risk generators must bear[18], and the

[15] The SPRG included five nominees from the Energy Retailers' Association of Australia, three nominees from the National Generators' Forum and a representative from the AEMC (observer). For further information about SPRG membership refer to: http://www.aemo.com.au/electricityops/0530-0015.pdf.
[16] Seed Advisory and Taylor Fry, *The Prudential Standard in the National Electricity Market – Final Report*, 4 August 2010.
[17] For further information refer to: http://www.aemo.com.au/electricityops/prudential_review.html.

degree of credit risk retailers are required to cover with credit support provided to AEMO. Potentially, ambiguity over the “reasonable worst case” definition might impact Market Participants’ investment and operational decisions. Generators might reduce investment in the NEM or factor a risk premium into their bids to compensate for the risk. Retailers might make riskier business decisions in the knowledge that generators bear the risk of poor investment or management decisions and, ultimately, the consumer bears the cost of these decisions.

AEMO considers that clarifying the “reasonable worst case” definition, and hence the NEM’s prudential standard, is an imperative that should be addressed before further efficiency gains can be made. This would ensure future changes are built on a solid and well understood foundation.

4.2 Seasonal factors and load profiles

Seed Advisory and Taylor Fry’s empirical evidence suggests there are a number of key factors affecting the credit risk a retailer poses to the NEM that the current prudential arrangements do not adequately take into account, including:

- A strongly seasonal variation of risk deriving from price and demand volatility. The peak periods where higher than average LGD events occur are in the periods May – August and October – February, these periods include summer and winter.

- The relationship between a retailer’s load factor and its probability of LGD. The higher a retailer’s maximum daily load relative to its average daily load, the higher the probability of LGD for that retailer. The current prudential arrangements effectively assume that each retailer’s load profile reflects the region’s profile.[19]

Hence, in meeting the prudential standard, the methodology to determine a retailers’ MCL should take into account the time of year and the retailer’s load profile. Seed Advisory and Taylor Fry’s report recommends doing this and noted that “…failure to differentiate is potentially significant because in the NEM, the summer and winter months are characterised by high load and high prices.”[20]

Seed Advisory and Taylor Fry’s report also states that the following factors should be taken into account to improve the predictive power and stability of the model used to determine the MCL:

- Calculation of the average forecast price over a season using four years of past data. Currently, approximately 12 months of data is used.
- Different volatility factors applied to the calculation of the MCL and PM, currently a single volatility factor is used.

[18] This is evidenced by clause 3.15.22 of the NER that requires that payments to generators would be reduced by shortfall payments of retailers.
[19] Seed Advisory and Taylor Fry, *The Prudential Standard in the National Electricity Market – Final Report*, 4 August 2010.
[20] ibid., p. 46.

- The historic prices should be adjusted to account for any increases in the market price cap for the period for which the MCL, outstandings limit (OSL) and PM ("prudential settings") are being determined.

Note, the proposed Rule does not specify how these factors will be included in the credit limit procedures because some flexibility is required to develop a methodology to determine the prudential settings in consultation with Market Participants, and to improve the methodology over time in light of experience.

4.3 Reaction period definition

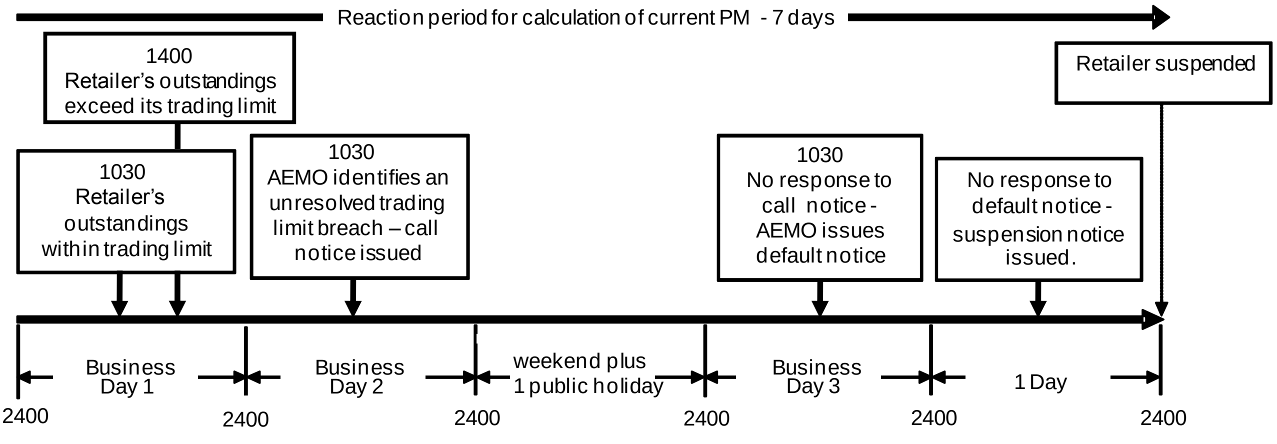
Currently the NER refers to the reaction period in clause 3.3.8(c), schedule 3.3.1(b)(6)(iv), and in the Glossary. In particular, schedule 3.3.1(b)(6)(iv) defines the reaction period as:

> (iv) the time from a *default event* to the suspension or other removal of the *defaulting Market Participant* from the *market*, being a period of up to 7 days (the *reaction period*);

AEMO notes that there is an inconsistency between the NER's definition of reaction period and the reaction period used in the credit limits methodology, and considers the NER definition to be in error. Under the NER, the reaction period is defined as commencing when default event occurs.[21] Under the credit limits methodology the reaction period is a time allowance from the start of the day a retailer's trading limit is exceeded by its outstandings amounts, to the date it could be suspended if this situation is not remedied, being seven days. The seven days is illustrated in Figure 2, and takes into consideration the NER's process to remove a defaulting retailer, allowing for three non-business days following the day on which the call notice was issued (that is, a weekend and one public holiday).

In this illustration, a default event does not occur until there is a failure to meet the call notice[22] which, as shown in Figure 2, could be over five days after the retailer's outstandings amount first exceeded its trading limit. Therefore, if the NER's definition of reaction period were to be applied, it could potentially leave days unaccounted for in the calculation of the PM.

Figure 2: Illustration of the time period the PM should mitigate



[21] Refer to clause 3.15.21(a) of the NER.
[22] Refer to clause 3.15.21(a)(1) of the NER.

AEMO considers that that the NER should be amended to clarify the trigger point for the reaction period and accurately indicate the time period the reaction period covers. The reaction period should be defined as an allowance for the potential number of days from the start of the business day that a retailer's outstandings amount exceeds its trading limit to the time the retailer is suspended from trading under clause 3.15.21(c) if the exceedance is not rectified, being seven days.

5 Proposed Solution

Where relevant, AEMO seeks to apply industry best practice standards in similar form to the Australian Prudential Regulatory Authority's (APRA's) recommended prudential standards to the NEM's prudential arrangements. One of APRA's key requirements is that organisations "…quantify certain credit risk components to determine the capital requirement for a given credit exposure…". AEMO considers that this can be achieved by requiring changes to the NER's current prudential framework and the methodology to determine the MCL, which AEMO would consult on in accordance with rule 8.9 of the NER.

5.1 Context of the proposed solution

Prior to considering AEMO's proposed solution, it is useful to consider the parallels between the prudential framework commonly used by financial institutions to assess credit risk for various asset classes and the proposed framework for the NEM discussed in Section 5.2.

Financial institutions rely on a prudential standard to determine the level of capital required to be held for each grade of customer. For Australian financial markets, APRA sets minimum prudential standards and authorises institutions that meet these minimum requirements. Generally, financial institutions have voluntarily adopted these standards and apply an internal ratings based (IRB) approach to manage their credit risk. The IRB approach is an internationally recognised method that many European banks have adopted and successfully used to assess credit risk, prior to Australian financial institutions adopting this approach.[23]

Both APRA and the Bank of International Settlements[24] identify that the key credit risk components on which the IRB approach is built include measures of probability of default (PD), Loss Given Default (LGD), and exposure at default (EAD). Financial institutions are responsible for their prudential modelling and calculating the PD and LGD used by their institution, after taking into account the risk weightings of customers.

Most Australian financial institutions set their prudential standard on the basis of historical experience of various credit exposures, and on analysis of the various risks the institution might face. For example, in calculating a PD, APRA recommends:

[23] Further information on the IRB approach can be obtained by referring to the Bank for International Settlements' (in particular the Basel Committee's work) and APRA's website.

[24] Bank for International Settlements, Basel Committee on Banking Supervision, "The Internal Ratings Based Approach", January 2001.

> "When estimating the average PD for each obligor grade, an [Authorised Deposit-taking Institution] ADI must use information and techniques that take appropriate account of long-run experience…the length of the underlying historical observation period used must be at least five years from at least one source. If the available observation period spans a longer period from any source, and the data are relevant and material, this longer period must be used."[25]

Broadly consistent with this approach, AEMO's proposed prudential standard for the NEM has been based on the findings in the Seed Advisory and Taylor Fry final report.[26] The Seed Advisory and Taylor Fry analysis was based on ten years of historical data for each region of the NEM (five years for Tasmania because it joined the NEM later).

Seed Advisory and Taylor Fry concluded that, due to the characteristics of the NEM and the statistical distribution of potential losses, unexpected losses cannot be statistically derived, and it is not practical to set a prudential standard for the NEM related to the size of a potential loss. Therefore, using long run historical data for the NEM, the proposed prudential standard is based on the probability of a LGD, rather than a probability estimate of the size of a loss.

In other words, the proposed prudential standard represents the probability of there being insufficient MCL to cover a retailer's outstandings at the end of the credit period.

The empirical evidence suggests that the statistical distribution of values of LGD is skewed, with a very small number (low-probability) of potentially large (high-consequence) events at the tail.[27] This indicates that the cost of holding sufficient additional credit support to fully cover some unexpected losses will be extremely high and such measures will not necessarily mitigate all potential loss. Consistent with this, and as discussed by CEG in their economic advice to AEMO[28], there would theoretically be a point at which the overall cost of participants holding additional credit support outweighs the incremental benefits of doing so.

It is, therefore, proposed to set the prudential standard at a probability of LGD that achieves an acceptable balance between the cost to the market of the necessary credit support and the market benefits it provides.

5.2 Proposed solution

AEMO proposes that the appropriate degree of credit risk that the NEM's prudential standard covers is 2% probability of LGD.

A key question in determining the probability level of the prudential standard is whether the incremental benefit of holding more credit support outweighs the incremental cost of doing so. This

[25] APRA, *Prudential Standard APS 113 – Capital Adequacy: Internal Ratings-based Approach to Credit Risk*, January 2008, pp. 27 – 28.

[26] Seed Advisory and Taylor Fry, *The Prudential Standard in the National Electricity Market – Final Report*, 4 August 2010.

[27] ibid., p. 9.

[28] CEG, *Assessing Efficiency in Settlement and Prudential Arrangements for Energy Markets: A Report for AEMO,* January 2010, paragraph 57, p.15.

matter was considered using sensitivity analysis in AEMO's Prudential Readiness Review[29], which indicated a significant step change in costs for credit support to reduce the probability below 2%. Consultation with NEM participants to date has also indicated general acceptance of this probability of LGD as a reasonable balance between the costs of credit support and the credit risk faced in the NEM.

Further, based on the Seed Advisory and Taylor Fry analysis of historical data for the NEM, this is comparable with the original level of credit risk under the prudential arrangements operating in the NEM prior to the introduction of the "reduced MCL" provisions in 2004. Seed Advisory and Taylor Fry have quantified the impact of the introduction of the reduced MCL provisions as having increased the probability of LGD from 2.2% to 3.9%, which is a material reduction in the prudential quality of the NEM, and inconsistent with meeting a predefined standard. AEMO's proposed framework therefore removes the "reduced MCL" provision from the Rules, and would require that that the MCL, OSL and PM be calculated simultaneously to meet the standard of 2% LGD. This would not preclude a lower OSL being determined through the credit limit procedures, as was the aim in the "reduced MCL" arrangement, but the new framework would require the participant's PM to be correspondingly increased to ensure the standard is met.

Based on Seed Advisory and Taylor Fry's analysis, the proposed prudential standard could be achieved without increasing the NEM's average prudential requirements (that is, the overall amount of credit support required from retailers) by changing the methodology used to calculate the MCL and PM.

It should be noted that, as is the case under the current prudential arrangements in the NEM, the proposed 2% probability of LGD accepts the risk that low-probability high-consequence events can occur and this could result in losses to generators, who, under the NER, bear any shortfall in payment.[30, 31] To date, a shortfall has never occurred, including under the two retailer of last resort (RoLR) events.

The proposed Rule also provides a framework that allows AEMO to develop a new methodology to meet the proposed prudential standard. The proposed Rule includes the key obligations to allow flexibility for consultation with Market Participants on the details of the methodology. Given the level of detail required by new credit limit procedures and the impact they would have on retailers, AEMO considers that this approach would give retailers the best opportunity to comment on the methodology. AEMO considers that the proposed prudential standard and framework has an appropriate degree of transparency and accountability.

Under the proposed prudential framework, the MCL determined by AEMO for each retailer (and which provides an estimate of the potential EAD for 98% of the time) would be set to meet the proposed prudential standard. The NER would continue to require AEMO to publish the credit

[29] AEMO, *Energy Market Prudential Readiness Review – Final Report to the MCE*, 13 April 2011, Appendix Five.
[30] Refer to clause 3.15.22 of the NER.
[31] For further information on the quantum of historic LGD events refer to Section 4 of Seed Advisory and Taylor Fry's report, and for the impact under the improved MCL methodology refer to Section 5.

limits procedure, which would cover the methodology used to determine the MCL, PM, trading limit, and a new term, OSL. The proposed new term, OSL, can be derived by MCL minus PM, whereas trading limit is derived by credit support minus PM. Therefore, if a retailer provides credit support equal to its MCL, then its OSL and trading limit would be identical; however, if a retailer provides more credit support than its MCL, the trading limit would be higher than its OSL. Under the proposed methodology, MCL, PM and OSL would be determined simultaneously to meet the proposed prudential standard.

Currently, AEMO has a broad idea of what would be included in the new credit limit procedures. The proposed Rule takes into account the factors identified in Section 4.2 to estimate the amount of credit support each retailer must provide AEMO to meet the proposed prudential standard. This would also allow AEMO to improve the calculation of the MCL.

AEMO also proposes that the NER includes a requirement on AEMO to review the effectiveness of the methodology to determine the prudential settings, to measure its performance against the proposed prudential standard, and report relevant findings and recommendations for improving the performance of the methodology. In effect, the methodology would be based on statistical modelling, as this would ensure the model's performance and stability against the prudential standard is maintained, can be monitored effectively and reported on. The model has the capacity to evolve over time when additional factors affecting credit risk retailers pose to the NEM are identified. Under the proposed Rule, and in accordance with rule 8.9, AEMO would consult with interested parties before further improvements are made to the credit limit procedures. For preliminary information on the new credit limit procedures refer to Attachment A.

Regarding the reaction period as currently defined in schedule 3.3.1(b)(6)(iv) of the NER, AEMO considers that the NER should clarify that the reaction period is seven days, intended to cover the time period commencing at the start of the business day in which a retailer's outstandings amount exceeds its trading limit, and ending at the time the retailer might be suspended from trading under clause 3.15.21(c).

6 Proposed Rule

6.1 Description of the proposed Rule

The proposed Rule seeks to maintain the existing balance between the NER and AEMO's procedures. Currently, the NER includes the key requirements, including the principles for determining the MCL and PM. The proposed Rule adopts this approach by seeking to replace existing requirements with new ones that allow the prudential standard to be clearly defined and minimum requirements included in the NER. The new credit limit procedures would give effect to these new provisions.

6.1.1 Reasonable worst case

The proposed Rule would:

- Delete references to “reasonable worst case” in the NER. Currently, these references are included in clauses 3.3.8(b) and (c), 3.3.10, and in the Glossary. Note references also appear in schedule 3.3.1(a) and (b)(8), and the proposed Rule would delete schedule 3.3 in its entirety (refer to Section 6.1.2).
- Replace “reasonable worst case” with a new definition for the prudential standard defining it as a 2% probability of a Market Participant’s MCL being exceeded by its accrued trading amounts (outstandings) at the end of the reaction period following a Market Participant exceeding its OSL and failing to rectify this breach on any day. This definition must make it clear that this only occurs where a Market Participant fails to provide AEMO with more credit support to bring its outstandings within its outstandings limit (refer to proposed OSL definition) on any day.

6.1.2 Changes for the new credit limit procedures

The proposed Rule would delete existing clause 3.3.8 and the principles for determining the MCL and PM in schedule 3.3 (refer to Table 1 for further details). These are proposed to be replaced with a new clause 3.3.8 that:

- Establishes an objective for the credit limit procedures to establish the prudential settings to ensure the prudential standard is met, the “credit limit procedures objective”.
- Requires AEMO to develop, publish and maintain credit limit procedures to implement the “credit limit procedures objective” and includes the methodology that AEMO will use to determine the prudential settings (refer to the proposed definition for prudential settings) for each Market Participant in accordance with the Rules consultation procedure in rule 8.9.
- Requires AEMO to determine each Market Participant’s prudential settings in accordance with the credit limit procedures.
- Establishes the MCL as the sum of the OSL and PM, and to clarify that while these are independent settings they are calculated simultaneously to achieve the prudential standard.
- Requires AEMO to take into account the following factors, to the extent AEMO considers it appropriate, in the methodology to determine the prudential settings for the relevant time period:
    - A region’s regional reference price (RRP) and the time of year the prudential settings are being calculated for.
    - A region’s volatility of load and RRP and the time of year the prudential settings are being calculated for.
    - AEMO’s estimate of the generation and load for each Market Participant.

  - The relationship between the average load and peak load for each Market Participant.
  - Any prospective reallocations.
  - The correlation between energy, reallocations and the RRP.
  - The statistical distribution of accrued amounts owed to AEMO.
  - The statistical distribution of accrued amounts that may be owed to AEMO.
  - The relevant time period that the MCL, OSL and PM is being calculated over.
  - In determining the PM, require AEMO to exclude estimates of a Market Participant's:
    - quantity and pattern of trading amounts where the estimate of the aggregate of all trading amounts for the period being assessed is a positive amount; and
    - quantity and pattern of reallocation amounts where the estimate of the aggregate of all reallocation amounts for the period being assessed is a positive amount.
  - Any other factors AEMO considers relevant to calculating the methodology.
- Require AEMO to review the effectiveness of the methodology at least once a year to measure its performance in comparison to the prudential standard and publish a report of the findings and any recommendations for improving the methodology.
- Require AEMO to comply with the Rules consultation procedures when making amendments to the credit limit procedures, except when making minor or administrative amendments.
- Require AEMO to review a Market Participant's prudential settings at least once a year and allow AEMO to change these prudential settings at any time and for any reason provided that any change to the prudential settings will apply with effect from the time AEMO specifies, which cannot be earlier than the time AEMO notifies the Market Participant of the change.
- Require AEMO to notify a Market Participant of any determination or change to its prudential settings and provide reasons for that determination or change.
- Create new definitions for:
  - Credit limit procedures – the procedures published by AEMO in accordance with draft clause 3.3.8(b).
  - Credit limit procedures objective – the objective of the credit limits procedures as set out in draft clause 3.3.8(a).

- Outstandings limit – AEMO's estimate of the maximum value that a Market Participant's outstandings can reach over the payment period (refers to the proposed payment period definition) if the Market Participant has lodged credit support equal to the MCL (refers to the proposed MCL definition).
- Prudential settings – the MCL, OSL and PM.

- Replace the following definitions:
  - Credit period – the number of days calculated for the payment period and the reaction period (refers to the proposed payment period and reaction period definitions).
  - MCL – the minimum amount of credit support a Market Participant must provide to AEMO to cover the relevant credit period as determined by AEMO in accordance with draft clause 3.3.8(c).
  - Payment period – the number of days in a billing period plus the number of days until payment is due for transactions for that billing period.
  - Prudential margin - the allowance made by AEMO in determining a Market Participant's MCL for the accrual of the Market Participant's outstandings during the reaction period (refers to the proposed reaction period definition).
  - Reaction period – as the number of days from the day that a Market Participant's outstandings amount exceeds its trading limit to when the Market Participant is suspended from trading under clause 3.15.21(c) if the exceedance is not rectified, this is seven days.

To be clear, Table 1 details the way in which the proposed Rule deals with existing clauses 3.3.8 and schedule 3.3. The useful principles in current schedules 3.3.1 and 3.3.2 are proposed to be retained and included as the factors AEMO must take into account in determining the prudential settings.

Table 1: Changes to Existing Provisions - clause 3.3.8 and schedule 3.3

ID	CLAUSE	PROPOSED CHANGE	COMMENTS
Clause 3.3.8			
1	(a) *AEMO* must determine for each *Market Participant* a *maximum credit limit* and *prudential margin*.	Amend – draft clause 3.3.8(c)	AEMO would continue to be required to determine an MCL and PM for each Market Participant, however the proposed Rule requires AEMO to calculate the MCL, OSL and PM simultaneously to meet the proposed prudential standard. Under the current NER, these are not calculated simultaneously, however the new MCL covers the same time period as included in the current NER, that is the OSL is for the "payment period" and the PM is for the "reaction period", together they cover the credit period.
2	(b) The *maximum credit limit* for a	Amend –	The MCL (and the OSL and PM) would be

ID	CLAUSE	PROPOSED CHANGE	COMMENTS
	Market Participant is a dollar amount determined by *AEMO* applying the principles set out in schedule 3.3, being an amount determined by *AEMO* on the basis of a *reasonable worst case* estimate of the aggregate payments for *trading amounts* (after *reallocation*) to be made by the *Market Participant* to *AEMO* over a period of up to the *credit period* applicable to that *Market Participant*.	draft clause 3.3.8 (c), (e)	determined by AEMO by taking into account the factors in draft clause 3.3.8(e) rather than those in schedule 3.3 and determined simultaneously to meet the new prudential standard.
3	(c) The *prudential margin* for a *Market Participant* is a dollar amount to be determined by *AEMO* applying the principles set out in schedule 3.3, being an amount determined by *AEMO* on the basis of a *reasonable worst case* estimate of the aggregate of the expected *trading amount* and the *reallocation amount* owing by the *Market Participant* to *AEMO* in respect of the *reaction period*.	Amend – draft clause 3.3.8(b)	The PM (and the MCL and OSL) would be determined by AEMO by taking into account the factors in draft clause 3.3.8(e) rather than those in schedule 3.3 and determined simultaneously with OSL to meet the new prudential standard.
4	(d) *AEMO* must *publish* details of the methodology used in determining *maximum credit limits* and *prudential margins*.	Amend – draft clause 3.3.8(b)	The methodology would determine the MCL, OSL and PM (see comment in ID 2). The requirement on AEMO has been expanded by requiring AEMO to determine this methodology in accordance with the Rules consultation procedures.
5	(e) *AEMO* shall review the *maximum credit limit* and *prudential margin* of each *Market Participant* not less than once each year.	Amend – draft clause 3.3.8(i)	This requirement has been amended because AEMO has proposed a new requirement for AEMO to determine the “prudential settings”. Hence, AEMO’s draft Rule amends this clause to also include AEMO determining the OSL. The clause continues to require AEMO to review these prudential settings at least once a year. It is important for prudential supervision purposes that this flexibility is maintained to allow AEMO to undertake these reviews on a more regular basis.
6	(f) *AEMO* may change either or both of the *maximum credit limit* or *prudential margin* for a *Market Participant* at any time (whether by reason of an annual review or otherwise), provided that any change to the *maximum credit limit* or *prudential margin* will apply with effect from such time (not being earlier than the time of notification of the changed *maximum credit limit* or *prudential margin*, as the case may be, to the *Market Participant*) as *AEMO*	Amend – draft clause 3.3.8(j)	Refer to comment in ID 5. AEMO’s draft Rule maintains the requirement for the MCL to be prospective.

ID	CLAUSE	PROPOSED CHANGE	COMMENTS
	specifies.		
7	(g) *AEMO* must notify the *Market Participant* of any determination or change under this clause 3.3.8 of that *Market Participant's maximum credit limit* or *prudential margin* (as the case may be) and, on request from that *Market Participant*, provide details of the basis for that determination or change, including the trading, price, volatility and *prospective reallocation* assumptions and the average *spot prices* and *ancillary service prices* and average *trading amounts*.	Amend – draft clause 3.3.8(k)	Refer to comment in ID 5. AEMO's draft Rule amends this requirement. AEMO considers that it is unnecessary to include the current level of detail regarding the elements of the determination in the NER, and considers this level of detail should be provided in the new credit limit procedures. Thus, draft clause 3.3.8(k) continues to require AEMO to notify Market Participants of any determination or change to their prudential settings and the reasons for the determination or change.
Schedule 3.3			
8	(a) The *maximum credit limit* should be set on the principle of imposing a guarantee of payment being made to *AEMO* to a level of a *reasonable worst case*.	Amend - draft clause 3.3.8(a)	The principle of this clause has been retained, however the reference to "reasonable worst case" has been replaced with the defined term prudential standard. The prudential settings are proposed to be set to meet this prudential standard.
9	(1) impartial objectivity rather than subjectivity, though it is recognised that some key parameters will need to be subjectively estimated from a limited amount of data - the estimation should be as impartial as possible;	Delete	It is unnecessary to include this as a requirement. In making decisions (including determining the NER and the new credit limit procedures), the AEMC and AEMO should be making reasonable and impartial judgements and should fulfil this principle in all matters. Further, there is now adequate market data to base decisions on and the proposed arrangements would use this data for estimating the MCL for Market Participants.
10	(2) the average level and volatility of the *regional reference price* for the *region* for which the *maximum credit limit* is being calculated, measured over a period of time comparable to the frequency of breaches of the *maximum credit limit*;	Amended – draft clause 3.3.8(e)(1) and (2)	Currently a volatility factor is used as a scaling factor and is applied to an historic average RRP which is averaged over approximately 12 months. Under the proposed framework, an average RRP would be calculated on the basis of four years of data for the relevant season for each region. A volatility factor would be applied to each of these prices. These factors are included in draft clause 3.3.8(d).
11	(3) the pattern of the quantity of electricity recorded in the *metering data* for the *Market Participant*;	Amended - draft clause 3.3.8(e)(3)	Currently, the pattern and quantity of electricity recorded in the metering data is considered in AEMO's estimate of average daily load Under the proposed framework, draft clause 3.3.8(d)(3) requires that AEMO take into account an estimate of the generation and load.
12	(4) the quantity and pattern of the *prospective reallocation* in the immediate future;	Amended - draft clause 3.3.8(e)(5)	Retained and redrafted to clarify that only registered prospective reallocations would be taken into account.
13	(5) the correlation between the metered	Deleted	This principle is currently applied through a

ID	CLAUSE	PROPOSED CHANGE	COMMENTS
	amounts of electricity and the *regional reference price*;		volatility factor. While this specific requirement is proposed to be deleted the correlation between the metered electricity amounts and the RRP would be taken into account under the factors included in draft clause 3.3.8(d).
14	(6) the length of the *credit period*, which is the number of days from the start of a *billing period* to the end of the *reaction period* taking into account: (i) the length of the *billing period*; (ii) the typical time from the end of the *billing period* to the day on which settlement for that *billing period* is due to be paid (the *payment period*); (iii)any current written request from the *Market Participant* to *AEMO* for the *maximum credit limit* to be determined on a *payment period* taken, for the purposes of clause 3.3.8 and not otherwise, to be 14 days; and (iv)the time from a *default event* to the suspension or other removal of the *defaulting Market Participant* from the *market*, being a period of up to 7 days (the *reaction period*);	Amended and schedule 3.3.1(a)(6)(iii) deleted	The length of time the MCL and PM is calculated over is unchanged, the proposed draft Rule includes these time periods as definitions in the Glossary. Schedule 3.3.1(a)(6)(iii) is proposed to be deleted to remove references to the reduced MCL. The definition of reaction period has been drafted to clarify that the reaction period begins from the end of a billing period and is for seven days.
15	(7) the statistical distribution of accrued amounts that may be owed to *AEMO*; and	Retained – new clause 3.3.8(e)(7)	
16	(8) the degree of confidence that the *maximum credit limit* will be large enough to meet large defaults (i.e. the degree of reasonableness in a reasonable worst case).	Deleted	Under the proposed Rule, the degree of confidence that the prudential settings would be large enough is included in the proposed prudential standard, that is, 2% probability of LGD. Since the prudential standard covers this, the clause should be deleted.
17	(c) As far as practicable, this schedule 3.3 must be read and construed as taking into account *market ancillary service* transactions for the calculation of the *maximum credit limit* for the relevant *Market Participant*.	Deleted	Under the current credit limits methodology, ancillary services are not taken into account because of the immateriality of these transactions. AEMO does not seek to change this. AEMO considers that the new credit limit procedures could take into account ancillary services under draft clause 3.3 8(d)(10) if it becomes necessary to do so.

6.1.3 Implementation and transition

In determining the new credit limit procedures, AEMO considers that transitional arrangements are necessary to facilitate the transition between the current and proposed prudential arrangements.

The proposed Rule requires AEMO to undertake a Rules consultation on the new credit limit procedures. This would involve developing a methodology to determine the prudential settings. To implement the proposed Rule in a timely manner, AEMO intends to initiate the Rules consultation on the new credit limit procedures shortly after the AEMC publishes its Draft Determination and Draft Rule. AEMO requests transitional provisions to allow those matters that are consulted on in anticipation of the Final Rule being made to satisfy the actions AEMO would be required to take under the NER.

AEMO also requests the AEMC includes transitional provisions that facilitate the transition to the new credit limit procedures. This is necessary because there needs to be sufficient time for AEMO to transition Market Participants from the current arrangements to the new arrangements. AEMO proposes that one month is a reasonable period to allow this transition to occur.

6.2 Draft of the proposed Rule

AEMO's draft Rule is included in Appendix 1.

7 How the Proposed Rule Contributes to the National Electricity Objective

Before the AEMC can make a Rule change it must apply the rule making test set out in the National Electricity Law (NEL), which requires it to assess whether the proposed Rule will or is likely to contribute to the NEO. Section 7 of the NEL states the NEO is:

… 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, reliability and security of supply of electricity; and

(b) the reliability, safety and security of the national electricity system.

AEMO considers that the proposed Rule would remove uncertainty over the NEM's current prudential arrangements. This would contribute to investor confidence in the NEM and promote more efficient investment in, operation and use of electricity services for the long term interests of consumers of electricity, with particular respect to the price of electricity.

The proposed Rule and the new credit limit procedures are inextricably linked since the procedures give effect to the NER, and improvements in economic efficiency and the costs and benefits of the proposed Rule occur as a result of the interaction of these. Given this, AEMO argues that the outcomes of the proposed Rule and new credit limit procedures would contribute to the NEO.

In considering how the proposed Rule meets the NEO, AEMO has considered advice from CEG on assessing options for change against the NEO. CEG states that the primary efficiency rationale for the prudential arrangements is:

> …not to make sure that generators have a high degree of certainty that they will be paid by retailers. Rather, we conclude that this is a side effect of an attempt to achieve the primary efficiency rationale – which is to give retailers the appropriate incentive to manage risks and, importantly, to ensure retailers do not have an artificial incentive to take on too much risk.[32]

AEMO has also taken into account the AEMC's considerations in its Hedging Review:

> …arrangements that meet the following assessment criteria…will contribute to the NEO because they would reduce costs to participants without materially impacting on the prudential quality of the NEM:
>
> - Improve (or at least maintain) the prudential quality of the NEM.
> - Reduce (or at least maintain) the cost of capital to trade in the NEM.
> - Operational effectiveness of arrangements.[33]

7.1 The proposed prudential standard

The proposed Rule removes any ambiguity over the NER's "reasonable worst case" definition by replacing it with a clear and unambiguous prudential standard that is 2% probability of LGD. Regulatory certainty of the prudential arrangements is important to Market Participants because the framework directly impacts them in two main ways:

- For generators, it impacts the level of credit risk they must accept in participating in the NEM, that is the degree of protection against the risk of default. This level of credit risk faced is likely to affect the strategies they pursue to mitigate this risk, such as hedging contracts and bilateral contracting arrangements or including a default risk premium in bid prices.
- For retailers, the prudential arrangements affect the amount of credit support that must be provided to AEMO to mitigate the credit risk they pose to the NEM. Provision of credit support affects their transaction and administration costs, and might affect their cost of capital or liquidity, depending on how they choose to meet these requirements.

The proposed Rule provides an achievable prudential standard that clarifies the risk allocation between generators and retailers. This achieves a better prudential standard than is currently achieved because it would provide generators with a higher degree of protection against the risk of a defaulting retailer.

AEMO considers that the proposed prudential standard would provide generators with a reasonable degree of certainty that the minimum amount of credit support retailers provide to AEMO would mitigate the credit risk they pose to the NEM. The proposed Rule would increase the transparency of the current prudential arrangements while maintaining their stability, by adopting

[32] CEG, *Assessing Efficiency in Settlement and Prudential Arrangements for Energy Markets: A Report for AEMO*, January 2010, paragraph 3, p. 1.
[33] AEMC, *Final Report: Review into the Role of Hedging Contracts in the Existing NEM Prudential Framework*, 30 June 2010, p. 42.

the existing overarching structure of the NEM's prudential arrangements. Under the proposed Rule, these prudential arrangements would be modified to incorporate the proposed prudential standard and include the changes necessary to achieve this. The proposed prudential standard would remove misunderstanding of the NEM's prudential performance target (that is, the prudential standard) and any regulatory uncertainty associated with this.

Further, the proposed Rule also removes principles that appear to have an inconclusive meaning or are redundant. This would further clarify and improve transparency and increase regulatory certainty of the NEM's prudential arrangements.

Given the importance of the prudential standard, AEMO considers it prudent to have a clear prudential standard before further market developments relying on this standard are pursued.

7.2 Changes to the prudential arrangements

In assessing further efficiency improvements as a result of the proposed Rule and prudential arrangements it is necessary to consider how the proposed changes allows retailer credit risk to be accounted for and the derived benefits of doing so. The proposed arrangements are a significant step in relating the minimum credit support requirements with the credit risk of retailers more closely. This would be achieved by taking into account factors affecting this risk as identified by Seed Advisory and Taylor Fry. This promotes economic efficiency because the operation of the proposed arrangements would send a price signal to retailers regarding the cost of managing factors that affect their credit risk associated with operating in the NEM. This is likely to necessitate a change in retailers' behaviour because it provides an incentive to reduce these credit risks and improve portfolio risk management through business strategies. Therefore, AEMO considers that this would result in more efficient economic outcomes.

AEMO notes that the empirical analysis also estimated that the proposed prudential standard can be achieved without increasing the overall amount of credit support retailers provide to AEMO.

The proposed Rule and the operation of the new credit limit procedures might also marginally reduce the cost of capital required to meet the NEM's prudential arrangements in some circumstances and locations. This could occur because the new MCL methodology better takes into account prices for particular seasons or because the reduced MCL provisions have been removed and might reduce the frequency of exceedances of the trading limit. Where this occurs, a retailer's available capital is reduced to the extent that some has been provided to AEMO as a security deposit. Hence, the retailer is no longer in a position to utilise or invest this capital in the highest value use for that particular business.

Consistent with the AEMC's criterion, any reduction in the cost of capital in the NEM would also promote the NEO because it reduces the costs of trading in the NEM.

Given this, AEMO considers that the proposed Rule and the operation of the new credit limit procedures would provide incentives for retailers to manage factors affecting their credit risk since under the new credit limit procedures these would be factored into the determination of the prudential settings. Consistent with CEG's comment, AEMO considers that this is likely to contribute towards the NEO because "economic efficiency will be promoted when all parties face price signals that accurately convey to them the cost of all their actions".

Further, the more sophisticated model for determining the prudential settings that AEMO is proposing would allow greater discipline on measurement and monitoring, and reporting and disclosure of the performance of the prudential arrangements. This would assist in the identification of changing economic conditions or circumstances that affect credit risk in the NEM. This would also give Market Participants assurance that the model is meeting the prudential standard and performing as intended. It would also provide information about whether changes need to be made to ensure the prudential standard is met.

8 Expected Benefits and Costs of the Proposed Rule

AEMO considers that the proposed Rule and operation of the prudential arrangements would provide generators with a reasonable and achievable level of protection against potential LGD events. While it is difficult to quantify the benefits of defining a clear and achievable prudential standard, the proposed Rule would improve the transparency and predictability of the prudential arrangements. This increases regulatory certainty and strengthens the soundness and stability of the prudential arrangements that would promote investor confidence, which is important for future investment in the NEM. Further, a well understood prudential standard and methodology would allow future improvements to be determined. This would be achieved by the operation of the new credit limit procedures, which would:

- Take into account factors affecting the risk of a retailers' portfolio, for example, a retailers' load characteristics. Including factors that better reflect the credit risk retailers pose to the NEM encourages them to make appropriate business decisions regarding risk management strategies of operations.
- Take into account general market risk, for example, calculating the RRP for specific time periods that would better reflect the risk of the price for that period.
- Maintain the operational effectiveness of the regime by leveraging off existing processes that are understood by Market Participants.
- No longer provide for reduced MCL arrangements.

Seed Advisory and Taylor Fry's modelling also indicates that the new prudential arrangements would have resulted in a reduction in the overall amount of credit support provided to AEMO over the period analysed, except for Queensland.[34] Assuming this modelling provides a reasonable indication of the impact the operation of the proposed Rule and new credit limit procedures would have on the level of credit support, over time, some retailers would see a reduction in the costs associated with providing credit support.

[34] Seed Advisory and Taylor Fry, *The Prudential Standard in the National Electricity Market, Final Report*, 4 August 2010, p. 16.

If retailers' MCL amounts more accurately reflect the credit risk associated with trading in the NEM, this could free up their capital in certain seasons and give them the opportunity to invest it more efficiently. It might also reduce the likelihood of a retailer's failing without sufficient credit support in place to mitigate losses. This might avoid the administrative costs associated with suspending retailers from trading in the NEM.

On the basis of Seed Advisory and Taylor Fry's analysis, the proposed Rule and operation of the new credit limit procedures is likely to increase the credit support required by retailers who have riskier portfolios, for example for retailers with a high load factor, and for the Queensland region. Given the proposed Rule is intended to include relevant factors affecting retailers' credit risk into the determination of the MCL, it is likely that riskier retailers could be affected by the proposed Rule. Although this might result in some degree of wealth redistribution, AEMO considers that this is appropriate because riskier retailers should bear the cost of riskier portfolios, and it is inappropriate to expect generators to do so. Higher credit support costs should encourage riskier retailers to make changes to their portfolios to manage these credit risks more effectively.

AEMO considers that the proposed Rule and arrangements would be operationally efficient. As discussed, by leveraging off the existing framework this would minimise the cost of the proposed changes. Similar to the current provisions, the proposed Rule includes the key factors that need to be included in the new credit limit procedures and allows sufficient discretion for AEMO to consult on the detail of the new credit limit procedures. AEMO considers that this flexibility is necessary to develop credit limit procedures that meet Market Participants' needs.

In terms of operational costs involved in setting up this new framework, AEMO expects the costs would be incurred in:

- Developing and determining the new credit limit procedures. This involves undertaking a Rules consultation, including commissioning a consultant to provide advice on elements of the methodology, and providing Market Participant support and education throughout the transition period.
- Setting up new systems and processes.

These costs are difficult to quantify because of the variables involved in any complex market change. Nonetheless, AEMO expects implementing this project would be approximately $550,000. The breakdown of these costs includes undertaking a Rules consultation on the new credit limit procedures and setting up systems and processes related to calculating the new methodology. This cost estimate allows for internal AEMO effort and includes some resourcing for an external contractor. It is considered likely that the project costs would be absorbed within AEMO's normal operational budget without impact on participant fees. AEMO notes that the indicated structure of the credit limit methodology[35] is more sophisticated than the current approach, and Market Participants and AEMO would incur costs in the consultation on the new credit limit procedures and, initially, in administering it.

[35] The credit limit methodology to be used to determine the prudential settings will be included in the new credit limit procedures.

AEMO does not expect that the costs involved in monitoring and reviewing the prudential arrangements to increase as a result of the proposed Rule. It is likely that administration costs involved in monitoring any breaches of trading limit would decrease because less monitoring would be required as a result of deleting the reduced MCL provisions. In effect, the reduced MCL provisions mean that retailers would need to monitor their total outstandings compared to their trading limit more regularly, where this limit is exceeded administration costs are involved to rectify this, including:

- Lodging a security deposit with AEMO.
- Lodging an additional bank guarantee with AEMO.
- Registration of a credit reallocation transaction that reduces the retailer’s total outstandings.

Reducing the frequency of trading limit exceedance would reduce the administration costs incurred by retailers and AEMO, and reduce the transaction costs involved in providing further credit support to AEMO.

Terms or Abbreviations

TERM OR ABBREVIATION	EXPLANATION
ACCC	Australian Competition and Consumer Commission
ADI	Authorised deposit taking institution
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
APRA	Australian Prudential Regulatory Authority
ASIC	Australian Securities and Investment Commission
CEG	Competition Economics Group
BIS	Bank of International Settlements
Code	National Electricity Code
EAD	Exposure at default
EL	Expected loss
FOA	Futures offset arrangements
GST	Goods and Services Tax
Hedging Review	The AEMC's Review into the Role of Hedging Contracts in the Existing NEM Prudential Framework
IRB	Internal ratings based
LGD	Loss given default
MCE	Ministerial Council on Energy
MCL	Maximum credit limit
NEL	National Electricity Law
NEM	National Electricity Market
NEO	The national electricity objective as stated in section 7 of the NEL
NER	National Electricity Rules
OSL	Outstandings limit
PD	Probability of default
PM	Prudential margin
Prudential Readiness Review	AEMO's Energy Market Prudential Readiness Review
Prudential settings	The MCL, OSL and PM
RRP	Regional reference price
RoLR	Retailer of Last Resort