REPORT: EFFECTIVENESS OF THE NEM PRUDENTIAL SETTINGS METHODOLOGY

CREDIT LIMIT PROCEDURES

Published: **March 2015**

AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

IMPORTANT NOTICE

Purpose

AEMO has prepared this document to provide information about the effectiveness of the methodology used to determine the prudential settings for Market Participants, as at the date of publication.

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EXECUTIVE SUMMARY

In 2012, the New Prudential Standard and Framework was implemented in the National Electricity Market (NEM). The Australian Energy Market Operator (AEMO) has monitored and analysed the performance of the new Framework, and is currently satisfied that it is performing as intended.

A key aspect of the new Framework was the establishment of a new Prudential Standard of 2%, and a revised maximum credit limit for market participants.

While AEMO does not suggest that authoritative conclusions about the Framework's effectiveness can be drawn from one year's observations, AEMO's review has found that the 2% Prudential Standard was met for 2014, and recommends no changes to the Credit Limit Procedures at this stage.

The Prudential Standard means the value of the prudential probability of exceedance (POE), expressed as a percentage. The prudential standard is 2%. The POE represents the probability of a market participant's outstandings exceeding its maximum credit limit at the end of the reaction period (7 days) following an event wherein the market participant exceeds its outstandings limit on a given day and subsequently fails to rectify the breach. The objective of the Credit Limit Procedures is to establish the process by which AEMO will determine the prudential settings for each Market Participant so that the Prudential Standard is met for the NEM over the long term, bearing in mind that actual market conditions can change from year to year. To determine each participant's prudential settings, AEMO applies the methodology outlined in the Credit Limit Procedures.

While there has never been a payment shortfall in the NEM, the 2% Prudential Standard target represents a significant improvement on the 4% POE previously carried under the former NEM prudential regime. Furthermore, a comparative assessment against a previous year with similar levels of outstandings in the market suggests that this reduced POE has been achieved in conjunction with a reduction in market participants' maximum credit limit requirements, subject to variations in the quantity of electricity purchased in the market.

AEMO also assessed the effectiveness of participant risk adjustment factors (PRAFs) for 2014, and found that market participants appear to have benefited from the new PRAF methodology, in aggregate, with maximum credit limit requirements which better reflect the relative risk a participant poses to the market.

Under the National Electricity Rules (clause 3.3.8(f)), AEMO is required to annually review and publish its findings on the effectiveness of the Credit Limit Procedures. Each year, AEMO will review the new framework, assess the merits of any potential improvements, and publish its findings.

CONTENTS

1. BACKGROUND

1.1 The New Prudential Standard and Framework

The New Prudential Standard and Framework (the *Framework*) was implemented in 2012, and is located under Section 3.3 of the National Electricity Rules (NER). Its key features are outlined in AEMO's Credit Limit Procedures.[1] The new Framework replaced the previous NEM prudential regime, outlined in AEMO's Credit Limits Methodology based on a standard of reasonable worst case.

Under the new Framework, the maximum credit limit for market participants is defined as:

Maximum Credit Limit = Outstandings Limit + Prudential Margin

Where:

- Outstandings Limit (OSL) reflects the level of credit support needed to cover liabilities for all trading periods that have occurred but not yet been paid for, assuming no market participant is failing.
- Prudential Margin (PM) reflects the credit support buffer intended to cover accruing liabilities in the NEM during the reaction period (seven days), which relates to the time it may take to curtail any further liabilities accruing from a failing market participant. (This would generally require the use of Retailer of Last Resort arrangements.)

A key aspect of the new Framework is the establishment of a Prudential Standard. The Prudential Standard means the prudential probability of exceedance (POE), expressed as a percentage. This is the probability of a market participant's maximum credit limit (MCL) being exceeded by its outstandings at the end of the reaction period (seven days), after the market participant exceeds its outstandings limit on a given day and has not rectified the breach. The new Prudential Standard is set at 2% (NER Clause 3.3.4A).

In practical terms, this means that the prudential arrangements establish a target that there will be no payment shortfall in the market in 98 out of 100 instances of a retailer defaulting on their market payments, i.e., the retailer exceeds their outstandings limit, subsequently defaults, and is removed from the market. In the remaining 2% of instances, AEMO's inability to collect sufficient funds following that participant's default, may result in a payment shortfall to remaining market participants who are net creditors in the market (considering both energy and reallocations).

1.1.1 How the new Framework changed NEM prudentials

Table 1 summarises the key differences between the previous NEM prudential regime (as outlined in the Credit Limits Methodology) and the new Framework (as outlined in the Credit Limit Procedures).

Table 1 Key differences between the Credit Limits Methodology and the Credit Limit Procedures

	Credit Limits Methodology (previous)	Credit Limit Procedures (current)
Definition of standard	Reasonable Worst Case	Prudential Probability of Exceedance (POE)
Relevant time period for MCL	MCL = 42 days Reduced MCL[2] = 28 days	42 days

[1] http://aemo.com.au/Electricity/Settlements/Prudentials

[2] An option existed under the previous Rules for Participants to have their MCL calculated using a credit period of 28 days instead of 42 days. This was known as a "reduced MCL" or "RMCL". In such cases, the MCL was calculated using the same average price, load and volatility factors as are used in the standard MCL, but a shorter credit period was used in the calculation. This results in the Participant having a lower Trading Limit and lodging less initial collateral with AEMO, when compared to the standard MCL.

Measure of standard	4% POE (actual based on historical data)	2% POE target
MCL	Based on 42 or 28 (for RMCL) days	MCL = Outstandings Limit + Prudential Margin
Basis of OSL and PM	Price x load x volatility x days	Price x load x $volatility_{OSL}$ x days Price x load x $volatility_{PM}$ x days
Variance of MCL over the year	Approximately every 3 months	By season
Regional Reference price (RRP) used	Average price from previous year	Average price from NEM start for applicable season
Volatility Factor (VF)	Volatility factor from previous year	Volatility factor from NEM start for applicable season
Participant differentiation	Participants differentiated by daily load only	Participants differentiates by load factor and load profile

1.1.2 Credit Limit Procedures

The Credit Limit Procedures establish the process for determining the prudential settings, and calculating the required credit support for market participants to meet the Prudential Standard.

The key features of the methodology used are:

- MCL calculated over three seasons - summer, winter and shoulder[3]
- MCL accounting for seasonal differences in regional reference prices (RRP)
- MCL accounting for price and load volatility in each region through volatility factors (VFs)
- Use of Participant Risk Adjustment Factors (PRAFs) which express the relationship between regional load/generation and the market participant's marginal loss factor (MLF) adjusted load/generation to adjust the OSL and PM to reflect the market participant's relative risk of their load/generation
- Smoothing of changes in market participant MCL requirements over corresponding seasons. The approach considers the seasonal data as a continuous series, over the lifespan of the NEM.
- For each region, only using load to calculate the level of volatility consistent with the 2% POE target, without adjusting for generation or reallocations.

1.1.3 Reviewing the Maximum Credit Limit under the new Framework

AEMO performs MCL reviews for the summer, shoulder (1 and 2) and winter seasons every year. The 2014 Summer MCL review was the first MCL review conducted in accordance with the new Framework, and was effective on 28 November 2013.

To date, in total, five MCL reviews have been conducted, with the following effective dates:

- 2014 Summer 28 November 2013
- 2014 Shoulder 1 1 April 2014

[3] The shoulder season is broken into two components Shoulder 1 and Shoulder 2 due to market participant preferences.

- 2014 Winter 1 May 2014
- 2014 Shoulder 2 2 September 2014
- 2015 Summer 2 December 2014

The data for the first four MCL reviews is included in the analysis in this report. The data from the latest (Summer 2015) MCL review is not included, as the season is incomplete.

1.1.4 Carbon price repeal

Due to the repeal of the *Clean Energy Act 2011* (CEA) effective on 1 July 2014, AEMO made amendments to the Credit Limit Procedures.

The amendments were implemented from the 2014 Shoulder 2 MCL review and resulted in the following actions:

- Adjusted the historical RRPs.
- Recalculated the VF percentiles for each region to meet the 2% POE target over the life of the NEM.
- Recalculated the regional average prices and volatility factors for 2014 Shoulder 2 season using the new VF percentiles and adjusted RRPs.
- Conducted 2014 Shoulder 2 MCL review using the new regional average prices and volatility factors.

The new VF percentiles will be used in all future MCL reviews until the calculation factors are reviewed according to the Credit Limit Procedures review process.

Information related to the Credit Limit Procedures on carbon price repeal can be found at:

http://aemo.com.au/Consultations/National-Electricity-Market/Credit-Limit-Procedures-Consultation-V2

2. ANALYSIS

2.1 Overview

To make an assessment of the performance of the new Framework, the data for 2014 was analysed, including that of 2014 Summer, 2014 Shoulder 1, 2014 Winter and 2014 Shoulder 2. The data investigated includes:

- MCL requirements set by AEMO,
- Guarantees and security deposits (cash) supplied to AEMO by market participants
- Market participant outstandings compared to the outstandings limits.

From this available data, AEMO has assessed the level of prudential probability of exceedance under the Framework, and the cost of achieving the 2% POE target.

The analysis indicates that the level of prudential probability of exceedance under the new Framework is consistent with the 2% POE target. This is a significant improvement on the level of prudential probability of exceedance in comparison to the previous NEM prudential regime. It effectively confirms a reduction in the prudential POE in the market from approximately 4% to under 2%.Furthermore, a comparative assessment against a previous year with similar levels of outstandings in the market suggests that this reduction in POE has been achieved in conjunction with a reduction in the maximum credit limit (MCL) requirements for market participants, recognising that significant variations in the electricity purchases between the compared periods may have a bearing on this assessment.

These two aspects of the analysis, while based on one year of data, indicate to AEMO that the new Framework is performing as intended.

The effectiveness of the participant risk adjustment factors (PRAF) was also assessed for this report. Based on the information available from the four MCL review periods completed to date, PRAF values for both load and generation are seen to generally fall within the expected bounds. Also, MCL requirements appear to be appropriately moderated by the relative risk a participant poses to the market.

2.2 Framework performance

There are two key aspects to analysing the performance of the new Framework:

1. Level of prudential probability of exceedance under the Framework; and
2. Cost of achieving the 2% POE target.

2.2.1 Level of prudential probability of exceedance

To understand the level of prudential probability of exceedance under the new Framework since it was first applied in November 2013, AEMO analysed the available prudential data for 2014. We also looked at the prudential data for the entire life of the NEM to verify the prudential risk management performance of the new Framework in the context of the NEM's lifespan.

The level of prudential probability of exceedance is indicated by two factors: the OSL exceedance, and MCL exceedance. The prudential probability of exceedance (POE) is defined as the probability that (on a given day) a market participant's outstandings exceeds their OSL; and that, following this exceedance at the end of the reaction period, the outstandings exceed their MCL.

AEMO analysed the number of instances that the OSL was exceeded, concurrently with the number of instances at the end of the reaction period that the outstandings exceeded the MCL for both 2014 and over the lifespan of the NEM. This analysis was conducted separately for each NEM region and is shown in Table 2 and 3.

Table 2 OSL and POE 2014

Region	OSL Exceedance	Prudential Probability of Exceedance
NSW	0.0%	0.0%
QLD	0.0%	0.0%
SA	0.5%	0.5%
TAS	0.0%	0.0%
VIC	4.1%	0.3%

Table 3 - OSL and POE – Life of NEM

Region	OSL Exceedance	Prudential Probability of Exceedance
NSW	**4.0%**	**1.8%**
QLD	**3.6%**	**1.8%**
SA	**4.2%**	**1.8%**
TAS	**2.5%**	**1.7%**
VIC	**3.7%**	**1.8%**

Table 2 lists the achieved POE for the four completed MCL review periods under the new Framework.

The data shows that during that time the POE was indeed well within the 2% target for all of the regions. We can see that Victoria had the highest probability of OSL exceedance, with all other regions close to, or at, zero per cent exceedance. While this suggests that the new Framework has been effective in meeting the Prudential Standard, it would be premature to conclude that the changes have been fully successful without several more years of data to analyse.

Note that when we apply the new Framework to all of the market data available from the start of the NEM, it is clear that the overall POE is within the 2% target. This supports the view that the new Framework is working as intended, in that the POE in the NEM has been reduced from its previous 4% to 2%.

Although the new Framework was designed to exactly meet the 2% POE target, Table 3 shows that the effective probability has been slightly lower than the 2% target. The following factors are likely to be responsible:

- Assessment period: at the time when the 2014 volatility factors and prices were published, data was only available up to 2013. The data used for analysis in this report includes the 2014 seasons.
- Volatility Factor Percentile revisions: AEMO reviews the Regional Volatility Factors Percentiles used in the MCL calculations about every three years. They were calculated for the first seasonal review and re-calculated in the 2014 Shoulder 2 review after the carbon price repeal.

Additionally, the data shows that regardless of whether we look at the four completed MCL review periods, or the life of the NEM data, the OSL is exceeded significantly more often than the MCL. This indicates that while market participants exceeding their OSL is not an uncommon occurrence, this very rarely leads to them exceeding their MCL levels over the reaction period.

It is important to note that there has never been a payment shortfall in the NEM. Meeting the 2% POE target does not mean that there will necessarily be a shortfall in any given year. It only provides a target within which we maintain the risk of loss in the event of market participant default.

2.2.2 Cost of achieving the 2% POE target

To understand the effectiveness of the new Framework in improving the use of capital in the NEM, it is useful to examine how the level of MCL has changed over time. The MCL requirement for each participant outlines the amount of credit support (i.e., guarantees) they must provide to AEMO.

However, analysing only the rise or fall of MCL amounts cannot offer a full picture of the effects of the new Framework: by necessity, this value changes with market changes, i.e., changes in demand and price. For a more accurate picture, consider the outstandings for the particular years being compared. The level of outstandings is a good proxy for the overall price and demand mix. Hence, periods of similar outstandings profiles form a good basis for MCL comparison.

For this analysis, we selected three different years (2011, 2012 and 2013) to compare with 2014, which was the first full year of the new Framework being in effect.

Of the three earlier years, 2011 offers the most credible comparison of the previous NEM prudential regime with the 2014 new Framework, as 2011 had the most similar year-long level of outstandings.

As shown in Figure 1, the level of outstandings for the two years, 2011 and 2014, are very similar (apart from the large spike in February 2011). It is also quite clear that the level of MCL in 2014 is significantly lower than in 2011, by an average of $500 million[4] over the year. This difference is largest in the Shoulder 2 period, which is, between September and November.

Figure 1 MCL and Outstandings: 2011 vs 2014

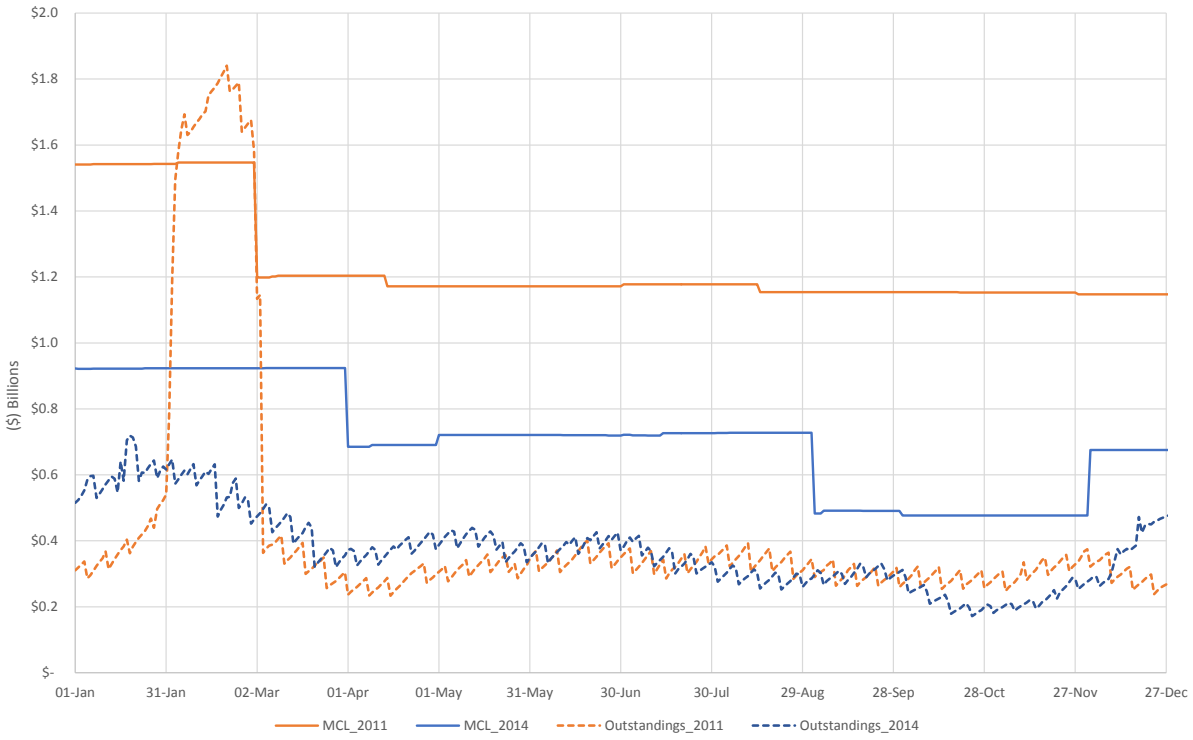


Figure 2, shows the comparison between the years 2012 and 2014. As the level of outstandings in the two years compared are quite different for significant timespans, it is difficult to draw any plausible conclusions regarding MCL levels. However, we can still see that the 2014 MCL level is lower for all time periods apart from July to August than in 2012, while outstandings are lower in 2014 compared to 2012 for the second half of the year only. Overall, MCL clearly tracked the profile of outstandings more closely in 2014 than in 2012.

[4] This figure should be considered as indicative only. Due to the comparative nature of this assessment, the actual savings if the new regime had been in place for the 2011 period may have been significantly different to this.

Figure 2 MCL and Outstandings: 2012 vs 2014

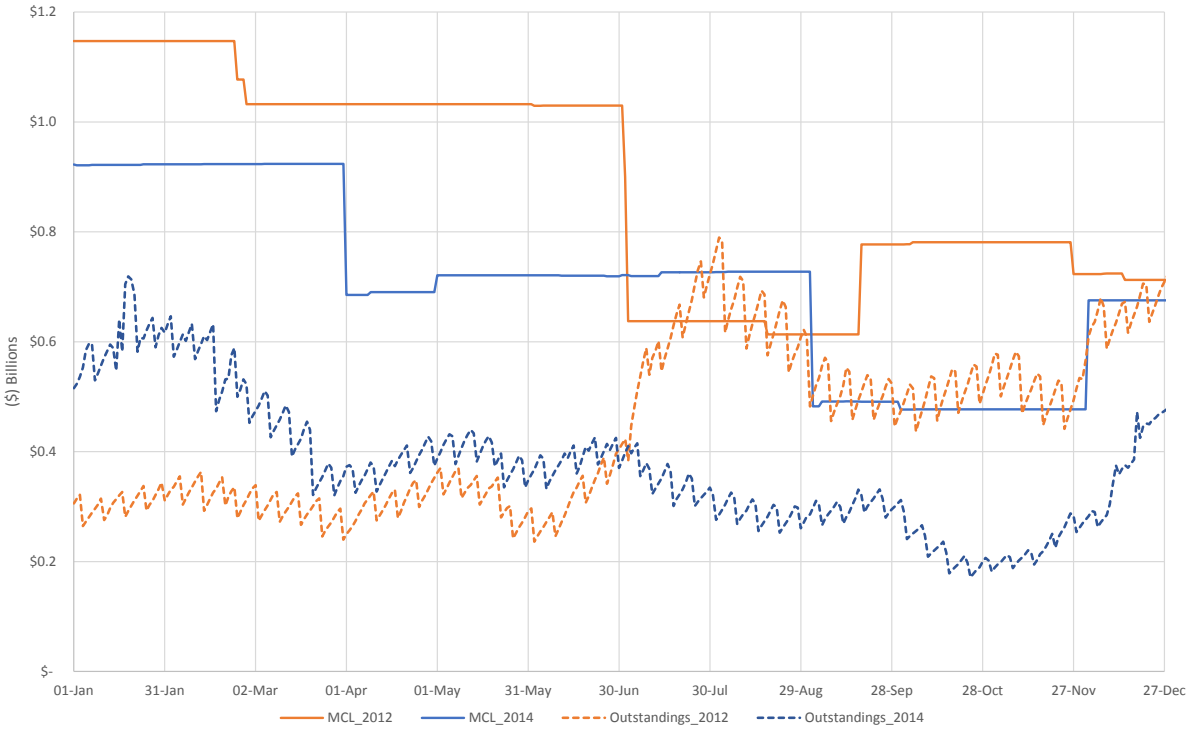
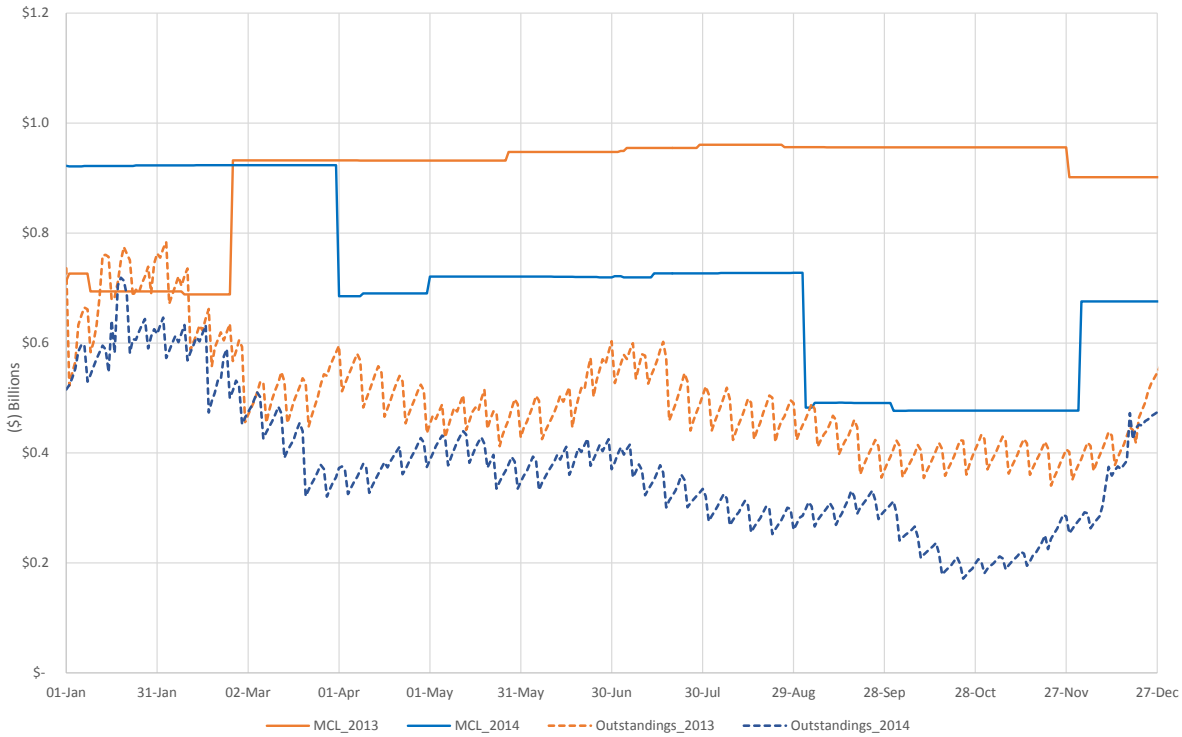


Figure 3 shows the comparison between the MCL and outstandings in 2013 (last year before the new prudential Framework was introduced) and 2014. In this comparison, the MCL level is lower for the 2014 year in all but the January to February period. However, the level of outstandings in 2014 is also lower over the entire year than in 2013 making it difficult to draw any plausible conclusions on whether the lower MCL levels are a direct consequence of the new prudential Framework. However it is clear even here that MCL levels tracked the profile of the outstandings more closely in 2014 than in 2013.

Figure 3 MCL and Outstandings: 2013 vs 2014



The new Framework has only been in applied for a little over a year. Accordingly, it is difficult to draw any credible conclusions regarding the level of MCL prescribed under the new Framework. However, from the data gathered to date, we have seen that:

- The level of MCL requirements are lower under the new Framework when comparing time periods of similar levels of outstandings.
- The MCL amounts prescribed by the new Framework appear to more closely track the level of outstandings than with the previous NEM prudential regime.
- The level of outstandings did not exceed MCL in the year 2014, while there were periods where outstandings were above MCL in all other years (2011, 2012, and 2013).
- The gap between the MCL level and the outstandings is consistently smaller under the new Framework.

All of the above observations may be due to the particular nature of trading, prices and demand levels in the NEM for the year 2014. AEMO will compare the next few years of data before drawing any plausible conclusions regarding the overall effectiveness of the new prudential Framework. However, initial assessments do suggest that the new Framework is working as intended, and has not lead to an increase in MCL levels (on aggregate) for market participants. In fact, MCL levels appear to be below those during comparable time periods under the previous MCL methodology, and better match the actual level of outstandings in the NEM.

2.2.3 Other Considerations

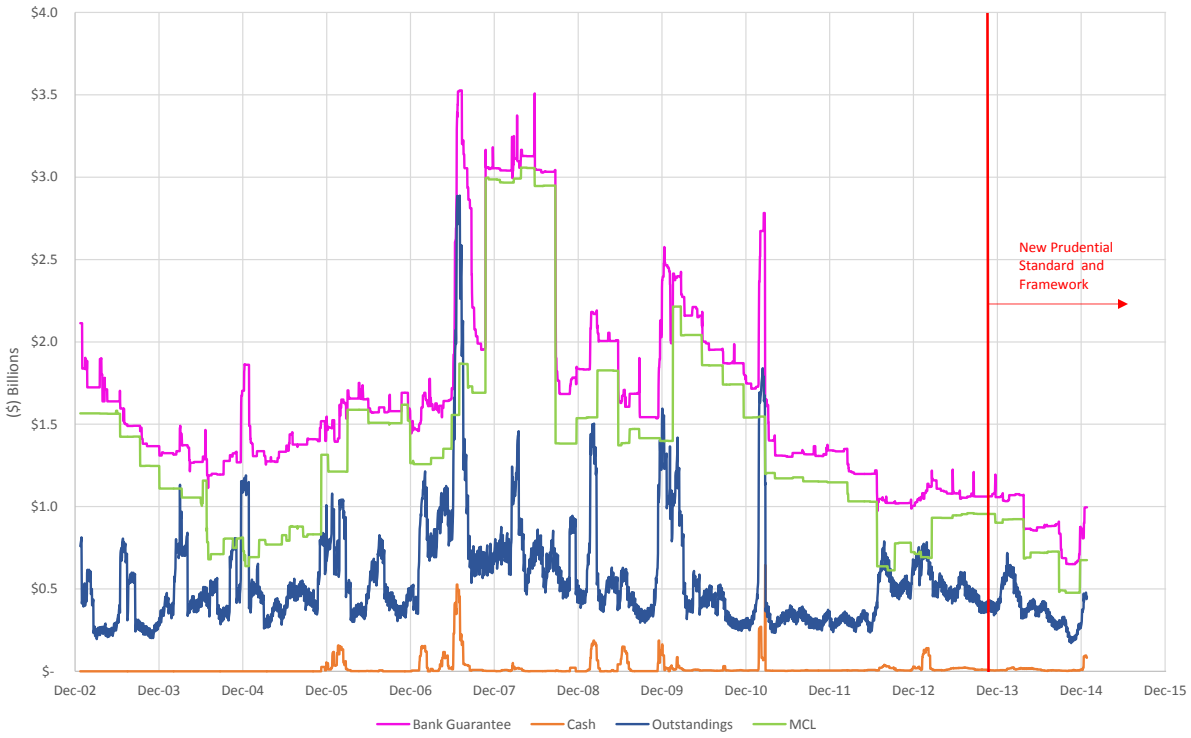
Figure 4 below looks at the levels of MCL, guarantees, cash (in the form of security deposits) and outstandings from 2002 to current and offers the following observations:

1. The level of bank guarantees is consistently above the MCL level. This is due market participants using bank guarantees not only to meet their MCL requirements, but also as a way of increasing their trading limits.

2. The trading limit for market participants is determined by the difference between the total value of their credit support and the prudential margin.[5] Where the prudential margin exceeds their total credit support, the trading limit will be negative. Market participants cannot trade above their trading limits.

Market participants could therefore provide bank guarantees with values higher than needed for meeting their current MCL. This allows participants more freedom to determine their trading limits, and thus better manage anticipated trading activities. It is also evident that, as intended, market participants readily use cash (security deposits) during periods of high outstandings (usually due to transient high prices).

Figure 4 MCL, Guarantees, Cash and Outstandings – Life of NEM



As can be seen from Figure 5, (aside from the lower outstandings and lower MCL levels discussed in the previous section) the general behaviour of market participants regarding prudentials has remained consistent over the transition to the new Framework. From November 2013 to early 2015, market participants continued to provide guarantees in excess of the MCL to an equivalent measure to previous years.

The value of security deposits has also remained consistent with that seen before the introduction of the new Framework, with a spike during periods of high outstandings (and most likely prices). This suggests that the new Framework has not materially affected market participants in their general approach to prudential management in the NEM.

However, it is worth noting that AEMO believes market participants are using security deposits less often since the introduction of the new Framework. This is likely because the concept of the Reduced MCL has been eliminated.

Under the previous NEM prudential regime, market participants had the option of a Reduced MCL (RMCL) which allowed the trading limit to be calculated on the basis of a 28 day credit period.

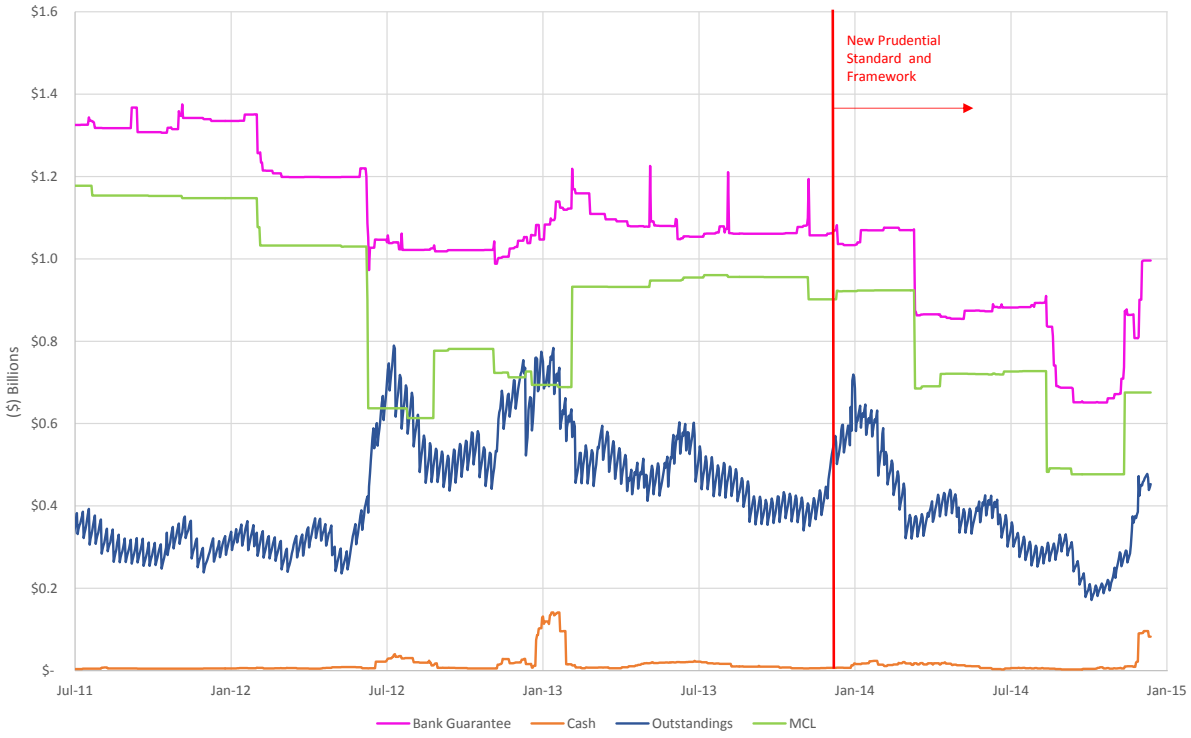
[5] The prudential margin ensures that the NEM is not exposed to a prudential risk inconsistent with the Prudential Standard during the period (seven days) of suspending a defaulting market participant from the NEM.

AEMO's 2011 Energy Market Prudential Readiness Review, found that the use of RMCL had the following consequences:

- Increased dependency on security deposits as the trading limit is reduced, in turn requiring market participants to more closely manage their outstandings, than with the standard MCL.
- Widespread adoption of the reduced MCL option was possibly adding further uncertainty regarding the level of prudential cover applied in the NEM.
- Independent studies showed that application of the reduced MCL mechanism resulted in reduction of the NEM prudential quality.

The concept of RMCL does not exist in the new Framework. However, this has not resulted in an increase in the overall level of MCL, as shown in Section 2.2.2. Additionally the POE has decreased significantly from 4% to 2% and the number of security deposit applications has also decreased, reducing the administrative workload for AEMO and market participants.

Figure 5 MCL, Guarantees, Cash and Outstandings – 2011 to 2015



2.3 Participant Risk Adjustment Factors

The Participant Risk Adjustment Factors ($PRAF_L$ or $PRAF_G$ or $PRAF_R$) are factors derived by AEMO using historical data. They are used to reflect the relative risk of market participants' estimated load, generation and energy and reallocations respectively. These PRAFs are based on an analysis of the relationship between half-hourly regional load/generation/energy and dollar reallocation profiles, half-hourly regional prices and historic POE.

Based on submissions received regarding the methodology for calculating PRAFs, AEMO's *2012 Credit Limit Procedures Draft Determination and Report* proposed to review the PRAFs as part of the annual review of the Credit Limit Procedures.

To determine a market participant's PRAFs, their margin loss factor-adjusted load and generation amounts are used to account for the impact of this variable on each market participant's prudential settings.

The PRAFs for each MCL review are based on available data from the previous like season, and are determined to be representative of the market participant's current trading behaviour.

Where insufficient historical data is available, or the market participant's trading behaviour has changed significantly since the previous like season, then a more representative range of historical data may be used. Where no data is available, a default PRAF value of 1.05 for load and 0.95 for generation is applied.

The previous NEM prudential regime did not include the concept of PRAFs. Instead, a standard factor of 1.05 was applied to load and generation to account for the impact of marginal loss factors on the MCL.

The analysis below examines the actual PRAF values for 2014, for load, generation and reallocations, and the distribution of these PRAF values.

The average PRAF values under the new Framework, for both load and generation, are lower than the average loss factor of 1.05 applied under the previous NEM prudential regime. Furthermore, the distribution of PRAF values for both load and generation are as expected:

- Approximately 89 per cent of the $PRAF_L$ values range between 0.9 and 1.1.
- Approximately 84 per cent of the $PRAF_G$ values range between 0.9 and 1.

This tentatively suggests that the calculation of PRAFs for both load and generation are working as intended. In general most market participants do not appear to be disadvantaged by the new methodology while a significant portion of market participants benefit from the introduction of the new methodology due to the application of a more accurate method of assigning participant specific risks related to load and generation.

2.3.1 PRAF Values

Table 4 shows the highest, lowest and average PRAF values for load, generation and reallocations for all regions for 2014. As shown, the average PRAF values under the new Framework, for both load and generation, are lower than the average loss factor of 1.05 applied under the previous NEM prudential regime.

Table 4 - PRAF values in 2014 seasons (all regions)

	$PRAF_L$	$PRAF_G$	$PRAF_R$*
Highest	12.46	2.99	5.34
Lowest	0.46	0.81	0.95
Average**	1.03	0.99	1.03

* Zero $PRAF_R$ are excluded.
** Average of PRAFs in all regions in 2014 seasons. For load/generation weighted PRAFs per region per season, refer to table 5 and 6.

Table 5 and Table 6 show load-weighted and generation-weighted PRAFs for all regions for the four 2014 seasons. The average $PRAF_L$ falls between 1.00 and 1.05, while the average for $PRAF_G$ falls between 0.97 and 0.99 for all regions and all seasons. Again, these are lower than the average loss factor of 1.05 applied under the previous NEM prudential regime.

Table 5 Load weighted $PRAF_L$

Region	2014 Summer	2014 Shoulder 1	2014 Winter	2014 Shoulder 2
NSW	1.01	1.01	1.01	1.01
QLD	1.05	1.05	1.05	1.04
SA	1.00	1.00	1.00	1.00
TAS	1.02	1.02	1.02	1.02
VIC	1.03	1.02	1.02	1.02

Table 6 Generation weighted $PRAF_G$

Region	2014 Summer	2014 Shoulder 1	2014 Winter	2014 Shoulder 2
NSW	0.99	0.98	0.98	0.98
QLD	0.97	0.97	0.97	0.97
SA	0.99	0.97	0.97	0.97
TAS	0.97	0.97	0.97	0.97
VIC	0.99	0.97	0.98	0.97

AEMO also analysed individual participants with a comparatively high or low PRAF to get a better understanding of PRAFs overall. The observations from these outliers are:

- In-house load consumption for generators: the usual analysis period for the in-house load uses the default period (from the first date of the previous 'like' season to the calculation up to date), which may lead to a higher $PRAF_L$. However, as the load volume is small (under 10 MWh), a higher $PRAF_L$ does not result a materially higher MCL.
- Low load consumption for customers: when a participant's load consumption is low, e.g., lower than 10MWh, the typical $PRAF_L$ analysis period for the load is a default period (previous 'like' season). This may lead to a higher $PRAF_L$. However, as the load volume is small, a higher $PRAF_L$ does not result a materially higher MCL.
- New registrations: PRAF calculations are based on market participant data from the previous 'like' season. For new customers who became effective in 2013, their load patterns would indicate a sudden change in load volatility as they started trading in the market. This could result in a higher PRAF for the seasons in which the load volatility is still high. A PRAF that better reflects a market participant's risk should be observed in the 2015 reviews.
- Low outstandings level: participants with low outstandings levels in the season, generally have a low $PRAF_L$.

2.3.2 Distribution of PRAF Values

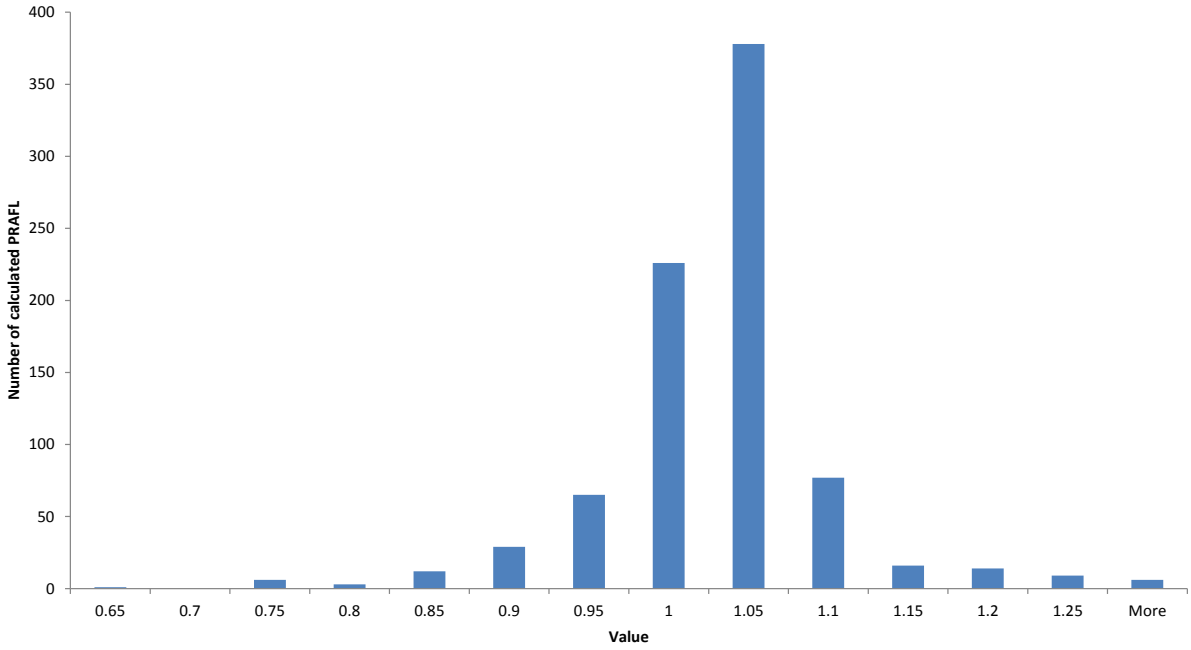
Under the previous NEM prudential regime, AEMO applied a fixed loss factor of 1.05 for load and generation when calculating the MCL. The Credit Limit Procedures introduced the individual PRAFs for load, generation and reallocation in the MCL calculation to reflect a participant's individual relative risk due to the trading behaviour. The PRAFs take loss factors into account. The individual PRAFs that vary significantly from the average loss factor of 1.05 would affect the MCL.

A default PRAF value of 1.05 for load and 0.95 for generation is applied when no historic data is available.

An analysis of the distribution of all market participant PRAF values is a useful way of judging how the new Framework is effecting MCL calculations.

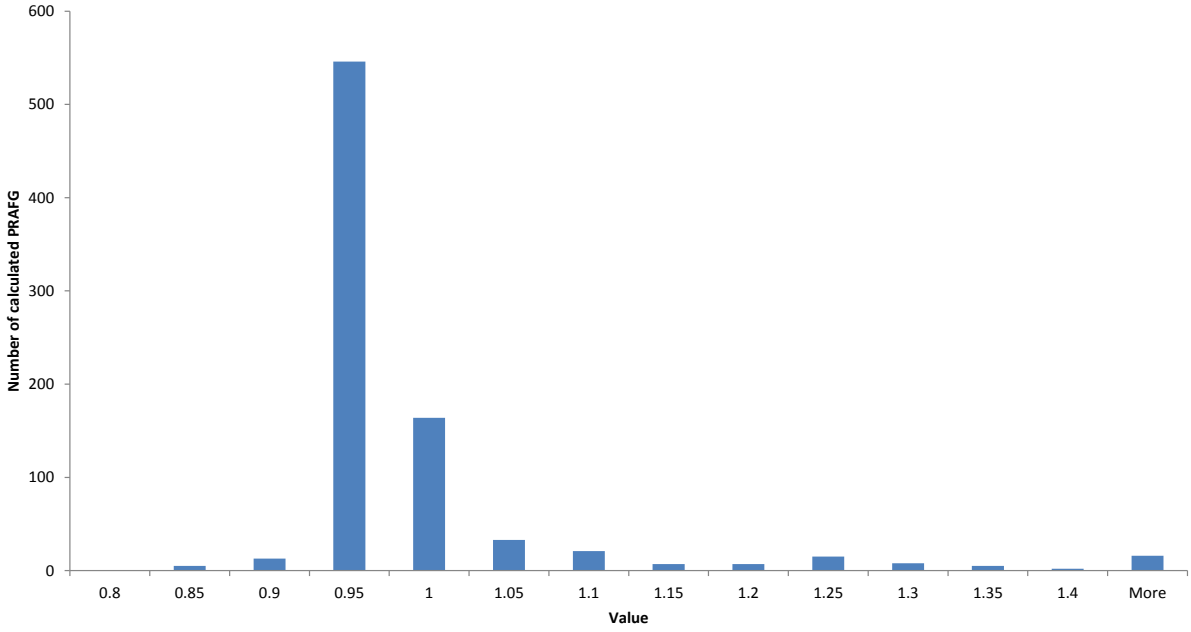
As shown in Figure 6, the majority (approximately 89 per cent) of the $PRAF_L$ values range between 0.9 and 1.1.

Figure 6 - $PRAF_L$ Distribution for 2014 (all regions)



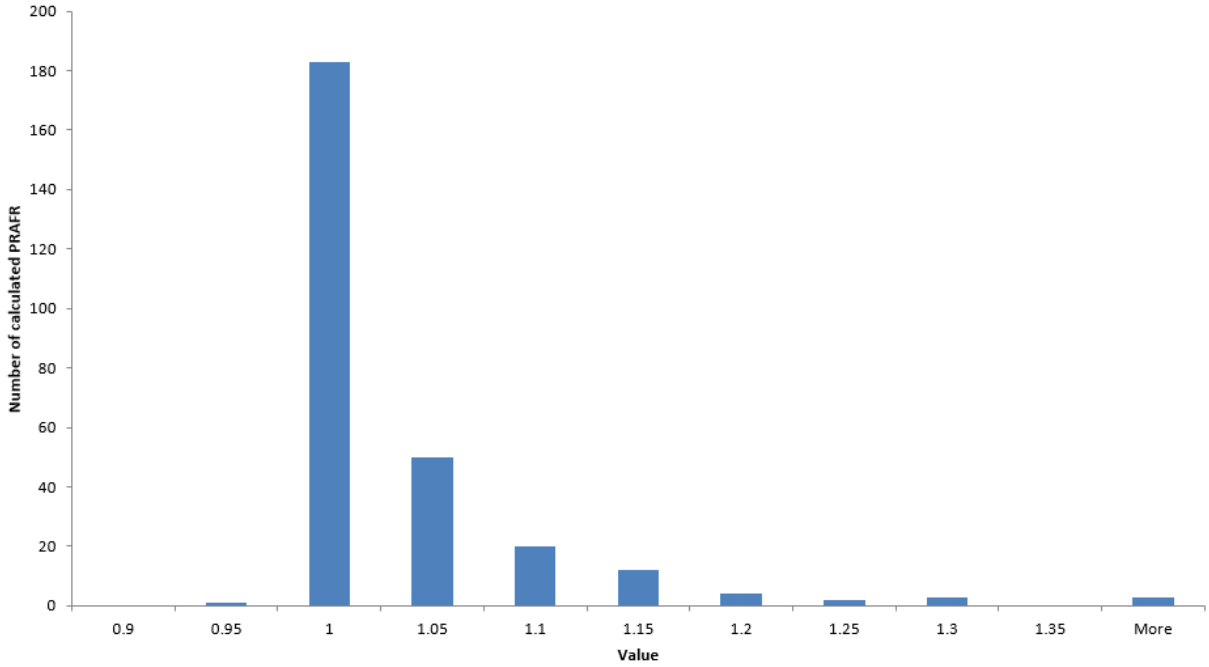
As shown in Figure 7, the majority (approximately 84 per cent) of the $PRAF_G$ values range between 0.9 and 1.

Figure 7 $PRAF_G$ Distribution for 2014 (all regions)



As shown in Figure 8, the majority (approximately 91 per cent) of the non-zero $PRAF_R$ values range between 0.95 and 1.1.

Figure 8 - $PRAF_R$ Distribution for 2014 (all regions)



The results from analysing distribution of PRAF values for both load and generation, are as expected. This indicates that the calculation of PRAFs for both load and generation are generally working as intended.

3. CONCLUSIONS AND RECOMENDATIONS

The analysis conducted for 2014 for the new Prudential Standard and Framework, indicates that the level of prudential probability of exceedance under the new Framework meets the 2% POE target. This represents a significant improvement on the level of prudential probability of exceedance during the previous NEM prudential regime. Furthermore, based on a comparative assessment of the available one year of data against similar periods under the previous MCL regime, our analysis suggests that this reduction in prudential probability of exceedance has been achieved in conjunction with a reduction in market participants' MCL requirements.

An assessment of PRAFs for 2014 indicates that average PRAF values for both load and generation falls below the 1.05 average loss factor applied under the previous NEM prudential regime. In aggregate, market participants appear to have benefited from the new PRAF methodology, with MCL requirements which are likely to be more reflective of the relative risk a participant poses to the market as compared to those under the previous regime.

The results of AEMO's initial review suggest that the new Framework is performing as intended. AEMO does not suggest that authoritative conclusions about the Framework's effectiveness can be drawn from one year's observations, However, AEMO recommends no changes to the Credit Limit Procedures at this stage. We expect to be able to provide more conclusive confirmation of this as more data becomes available for analysis over the next few years.

While these observations are a product of extensive modelling and assessment of the market data available since the inception of the new Framework, we note that additional analysis over the next few years will be required for AEMO be able to make definitive conclusions regarding its overall effectiveness.

Annual reviews of the new Framework will continue, with the findings used to make any changes and/or improvements as deemed necessary.

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