AEMC

Proposed Rule Determination – MCL and FOA Prudential Supervision Risk Analysis

January 2009

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21 January 2009

Our Ref: 261135

Dear Dr Campbell

Re: AEMC – Proposed Rule Determination – MCL and FOA Prudential Supervision Risk Analysis

Thank you for allowing Deloitte to assist the Australian Energy Market Commission (AEMC) in making a Rule Determination with regard to the proposed rule change to prudential supervision incorporating the Maximum Credit Limit (MCL) methodology and Futures Offset Arrangements (FOAs) methodology.

Please find attached the Report for our recently completed AEMC consulting engagement. Our report has identified risks associated with both the current and proposed methodologies. Where possible we have quantified these risks.

If you have any questions or wish to discuss anything raised in our final report, please contact me on (03) 9208 7482.

Yours sincerely

Jaimee Thompson
Partner

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1 Executive Summary

1.1 Background

The Australian Energy Market Commission (AEMC) is the rule maker for the National Energy Market (NEM) in Australia. The AEMC is currently responsible for the National Electricity Rules ("the Rules") and policy advice covering the NEM. A key regulatory function of the AEMC is to consider Rule change proposals and the effect proposals may have on the operation of the NEM with regard to:

- the National Electricity Objective (NEO)
- the process for making Rules as prescribed in the National Electricity Law (NEL).

Deloitte have been engaged to perform a risk assessment and quantification on the joint submission received by the AEMC on 10 January 2008 from Australian Power & Gas, Infratil Energy Australia and Momentum Energy (the proponents). The proposed Rule changes were authored by d-cyphaTrade.

The proposed Rule changes consist of two (2) parts:

- Part 1: to modify the Maximum Credit Limit (MCL) methodology
- Part 2: to define and accommodate Futures Offset Arrangements (FOAs).

The constituent parts of the proposed Rule change process are outlined in more detail below.

1.1.1 Part 1 Rule Change Proposal (MCL methodology)

Currently, Schedule 3.3.1 of the Rules sets out the principles that the National Electricity Market Management Company (NEMMCO) must follow when it determines a NEM participant's MCL. Clause 3.3.8(d) of the Rules requires NEMMCO to develop a methodology to determine the MCL for each NEM participant.

NEMMCO's process to calculate the MCL as per Clause 3.3.8(d) is contained in the NEMMCO procedure "Method for Determining Maximum Credit Limit & Prudential Margin" (the MCL Procedure).

The proponents are proposing a Rule change that the MCL methodology be changed to use forward looking prices based on the SFE electricity futures prices. Currently, the MCL methodology uses historical spot market prices.

1.1.2 Part 2 Rule Change Proposal (FOAs)

Clause 3.15.1 of the Rules requires NEMMCO to facilitate the billing and settlement of payments due in respect of transactions, including:

- spot market transactions
- reallocation transactions
- ancillary services transactions under clause 3.15.6A.

Accordingly, the current reallocation arrangements are facilitated by NEMMCO. The Rule change proposes that clause 3.15.1 of the Rules be amended to explicitly recognise Futures Offset Arrangements (FOAs).

1.2 Work Performed

1.2.1 Risk Assessment Process

The objective of our engagement was to perform a risk assessment and quantification in relation to the proposed FOA rule change and the current operation of the MCL methodology (including reallocations). We did not consider any rule changes that are currently being implemented by NEMMCO.

Our work was performed during the period 23rd July 2008 to 13th August 2008. We have not updated the results of our work since 13th August 2008.

The risks have been identified through a review of the ten public submissions received by the AMEC and meetings with the following parties:

- AEMC
- NEMMCO
- d-cyphaTrade
- Proponent Retailers
- Clearing Members (sample only)
- Market Participants (sample only)

Following identification of the risks, additional meetings were held with NEMMCO, d-cyphaTrade and the AEMC to present the results. A workshop was then conducted for stakeholders, as defined by the AEMC, where the results of the risk assessment and quantification were presented. Following discussion at the workshop the risk registers were updated to reflect stakeholder responses.

1.2.2 Summary of Results

Three separate risk registers were developed to support the following areas:

- Current MCL methodology
- Proposed MCL methodology
- Proposed FOA methodology

It should be noted that the risks are repeated in the categories where the operation of the market will not change if the rule change is implemented. Outlined in table 1.2.1 below is a summary of the risks raised across the three areas:

	Very High	High	Medium	Low	TOTAL
MCL Current	0	0	11	12	23
Credit risk	0	0	5	9	14
Implementation risk	0	0	0	0	0
Market risk	0	0	6	2	8
Operational risk	0	0	0	0	0
Regulatory risk	0	0	0	1	1
Settlement risk	0	0	0	0	0
MCL Proposed	0	4	2	3	9
Credit risk	0	1	1	2	4
Implementation risk	0	3	1	0	4
Market risk	0	0	0	1	0
Operational risk	0	0	0	0	0
Regulatory risk	0	0	0	0	0
Settlement risk	0	0	0	0	1
FOA Proposed	0	7	18	16	41
Credit risk	0	0	6	2	8
Implementation risk	0	1	3	0	4
Implementation/Credit risk	0	2	1	0	3
Implementation/Market risk	0	2	0	1	3
Implementation/Regulatory risk	0	2	0	2	4
Market risk	0	0	7	7	14
Operational risk	0	0	1	1	2
Regulatory risk	0	0	0	3	3
Settlement risk	0	0	0	0	0

Table 1.2.1 Summary of risks

The complete risk register can be found in Appendix B.

1.3 Statement of Responsibility

For the avoidance of doubt, the procedures performed in carrying out this project did not constitute any form of audit or assurance engagement carried out in accordance with Standards issued by the Australian Audit and Assurance Standards Board. We have therefore not expressed any form of assurance opinion on the findings, and none should be inferred from any comments in this report.

The matters raised in this report are only those which came to our attention during the course of performing our risk analyses, and are not necessarily a comprehensive statement of all the weaknesses that exist in the current processes, or improvements that might be made. We cannot, in practice, examine every activity and procedure, nor can we be a substitute for management's responsibility to maintain adequate controls over all levels of operations and their responsibility to prevent and detect irregularities, including fraud. Accordingly, management should not rely on our report to identify all weaknesses that may exist in the systems and procedures under examination, or potential instances of non-compliance that may exist.

The complete Statement of Responsibility, including a discussion of the limitations inherent in our work, is set out at Appendix B.

2 Detailed Risk Analysis

2.1 Approach

The risks have been identified through a review of the ten public submissions received by the AMEC and meetings with the following parties:

- AEMC
- NEMMCO
- d-cyphaTrade
- Proponent Retailers
- Clearing Members
- Market Participants

Following the initial identification of risks, the risk registers were discussed with the following stakeholders:

- AEMC
- NEMMCO
- d-cyphaTrade
- generators

The risks were then analysed in terms of the context of the risk (***category***), how likely the risk event was to occur (***likelihood***) and the possible magnitude of the effect (***consequence***) of the risk event from the perspective of credit support adequacy.

The methodology to analyse the risks involved three parts:

1. Risks were assigned a context which represented the type of risk that may rise
2. Risks were measured against established criteria for likelihood and consequence by referring to rating scales outlined below
3. The final score for each risk is calculated by adding the likelihood and consequence rating. This was then plotted on the residual risk rating matrix to give a risk rating of very high, high, medium or low.

A workshop was then conducted for stakeholders, where the results of the risk assessment and quantification were presented. Following discussion at the workshop the risk registers were updated to reflect stakeholder responses.

Risk Category

Each risk was assigned a risk category which represented the type of risk that may arise. Our risk categories are classified by the following definitions:

Risk Category	Definition
Credit risk	The risk that a form of credit, for example, security deposit or bank guarantee, is not sufficient or is overly conservative
Implementation risk	The risk resulting from the new rule change including changes to policy, procedures and activities introduced
Market risk	The risk resulting from adverse movements in market price and/or behaviour in the physical electricity or financial market
Operational risk	The risk of loss that arises from inadequate systems, controls, human error that does not relate to strategic, market or credit activities
Regulatory risk	The risk that arises when the rules and regulation do not adequately define the intended requirements
Settlement risk	The risk of non-payment of a financial obligation by a Market Participant

Likelihood rating

The likelihood of the risk is an assessment on the frequency of occurrence. The likelihood ratings are defined as:

Likelihood	Likelihood of Occurrence
Almost Certain	The event *will occur* within the physical or financial market
Likely	The event is *likely to occur* within the physical or financial market
Possible	The event *may occur* within the physical or financial market
Unlikely	The event is *not likely to occur* in the physical or financial market
Rare	The event will *only occur in exceptional* circumstances in the physical or financial market

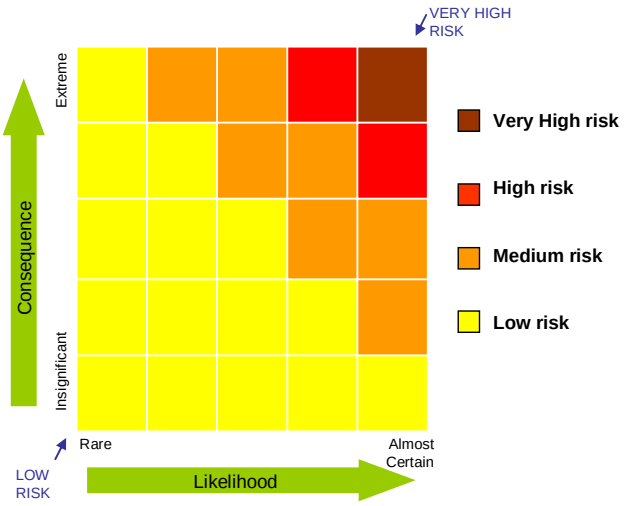
Consequence rating

The consequence of a risk relates to the severity of the risk occurring. The consequence of the risk was based on qualitative and quantitative analysis. The consequence ratings are defined as:

Consequence	Definition
Extreme	Unexpected or unplanned loss to market operations causing significant adverse impact to all Market Participants
Serious	Numerous incidents affecting Market Participants and having a serious impact on market operations
Moderate	Isolated incident with reasonable impact on market operations
Minor	Minimal impact to Market Participants and on market operations
Insignificant	Immaterial or no impact on market operations

Risk rating

The overall risk rating represents the risk after taking into account the likelihood and consequence of the risk occurring. The risks have been determined by applying the risk likelihood and consequence rating as per the graph below.



2.2 Summary Risk Register

Table 2.2.1 below is a summary of the risks raised across the three areas. The complete risk register can be found in Appendix B.

It should be noted that the risks are repeated in the categories where the operation of the market will not change if the rule change is implemented.

Eight risks were identified as implementation risks. This was due to minimal information being provided in relation to how the proposed rule change would operate in practice.

Table 2.2.1 – Summary of risks

	Very High	High	Medium	Low	TOTAL
MCL Current	0	0	11	12	23
Credit risk	0	0	5	9	14
Implementation risk	0	0	0	0	0
Market risk	0	0	6	2	8
Operational risk	0	0	0	0	0
Regulatory risk	0	0	0	1	1
Settlement risk	0	0	0	0	0
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Operational risk	0	0	1	1	2
Regulatory risk	0	0	0	3	3
Settlement risk	0	0	0	0	0

2.3 Risk quantification and analysis

In relation to the risks identified we attempted to quantify the consequence of the risk. This was performed through either qualitative or quantitative analysis. In certain instances we were unable to quantify the risks. As a result our ratings are based on observations made during the engagement and these observations may have been limited by the scope of the work performed.

Outlined below is a summary of the results of our quantification. We have ordered the results based on the high rated risks through to the low rated risks and on like groups of risks. Where possible we have directly contrasted the quantification results between the current and proposed processes to provide a greater level of comparison between the current and proposed rules.

2.3.1 Legal implications of current and proposed process

Outlined below is a summary of the risks that were raised in relation to the legal requirements of the current and proposed process. We were unable to quantify these risks as they require a legal review by the AEMC.

Reference	Risk Category	Risk Description	Risk Rating
FOA 2	Implementation/Regulatory risk	FOA contracts may not be paid to NEMMCO by Clearing Members / Counterparties	High
FOA 3	Implementation/Credit risk	NEMMCO may have insufficient coverage if an underlying FOA is sold or terminated by the Market Participants	High
FOA 4	Implementation/Regulatory risk	NEMMCO may not have a legal right to keep the funds provided under an FOA contract by NEM participant in normal, settlement or credit default (e.g. – clawback)	High
FOA 5	Implementation/Credit risk	Clearing Member does not pay in a timely manner as they are not bound by the NEM rules	High
FOA 6	Implementation/Market risk	NEMMCO may not receive FOA payment due to Clearing House not being able to isolate daily movements in underlying electricity futures contracts	High
FOA 7	Implementation/Market risk	NEMMCO may not receive funds due to Clearing Members withholding payment from clients	High
MCL C 21	Credit Risk	Reallocations might be subject to clawback	Medium
MCL C 23	Regulatory Risk	NEMMCO may not have the legal right to keep the funds provided under bank guarantees or security deposit arrangements by a NEM participant in normal, settlement or credit default	Low
FOA 27	Implementation/Regulatory risk	Disputes are unable to be resolved in a timely manner due to the process not being adequately defined	Low
FOA 32	Implementation/Regulatory risk	Clearing Members might have obligations preventing them from entering the NEM	Low
FOA 38	Regulatory risk	Reallocations may be subject to clawback	Low
FOA 40	Implementation/Market risk	Clearing House may not pay Clearing Members	Low

We have assigned *indicative* consequence and likelihood ratings in these instances. The ratings are based on inferences drawn from public submissions, discussions held with stakeholders and observations made throughout the engagement.

2.3.2 Understanding of proposed rule changes

Outlined below is a summary of the risks that were raised in relation to the level of understanding of the proposed rule change:

Reference	Risk Category	Risk Description	Risk Rating
MCL P 1	Implementation risk	Market Participants do not understand the basis for the MCL calculation	High
MCL P 2	Implementation risk	Proposed Rules and Procedures do not adequately define the processes and requirements	High
FOA 1	Implementation risk	Proposed FOA process is not understood by Market Participants, NEMMCO and Clearing Participants	High
FOA 8	Implementation risk	Proposed Rules and Procedures do not adequately define the processes and requirements	High

In order to assign a consequence rating we selected the following sample of parties to discuss their understanding and the proposed rule change:

- Market Participants (sample only)
- Proponents
- d-cyphaTrade,
- NEMMCO
- Clearing Members (sample only)
- Australian Stock Exchange

We noted in each discussion that the understanding of how the proposed rule change would operate in practice varied significantly. For instance key differences included:

- how the FOA contract would by structured and bind the Market Participant, NEMMCO and the Clearing member
- whether a futures contract in one region could be used to reduce the MCL in another region
- the impact of the proposed MCL and FOA process for regions with little or no futures trading
- the futures price that would be used to calculate the MCL

As result a consequence rating of serious was assigned as the practical implications of the rule change were not understood in sufficient detail.

2.3.3 Accuracy at the MCL calculation methodology

Outlined below is a summary of the risks that were raised in relation to the calculation of the MCL methodology using historical or futures prices:

Reference	Risk Category	Risk Description	Risk Rating
MCL P 4	Credit risk	MCL might not be accurate as it is calculated with a Volatility Factor determined quarterly per region, and this Volatility Factor might already be considered in the price of futures	High
MCL C 12	Credit risk	The historical average pool price does not reflect the required MCL	Low
MCL P 7	Credit risk	The MCL is inaccurate as the futures prices do not accurately reflect future NEM spot market prices	Low

The current MCL methodology is based on historical prices. The rule change proposes to calculate the MCL based on futures prices. However, it is silent on the price that should be applied.

In order to assign a consequence rating we determined the number of times the trading limit was breached together with the financial impact of the breach under both methodologies. In performing this analysis we applied the following assumptions:

- The required MCL reflects the total level of credit support required within the NEM. In practice one Market Participant's credit support cannot be applied to cover the short-fall of a different Market Participant
- Additional credit support was provided upon breach of the trading limit
- The MCL is calculated one month prior to quarter start
- Bank guarantees and reallocations were not provided by Market Participants
- Excludes NEMMCO's daily prudential monitoring

To quantify the number of times the MCL was breached we calculated the total MCL coverage and compared the total daily outstandings in the NEM. The total MCL coverage was calculated by multiplying the daily demand for each NEM region by the MCL average price and volatility factor set at the start of each financial quarter. The daily total outstandings was calculated by multiplying the daily demand by the average daily price for each NEM region.

Figure 2.3.1 below shows the level of credit support provided together with an indication of when the credit support was exceeded.

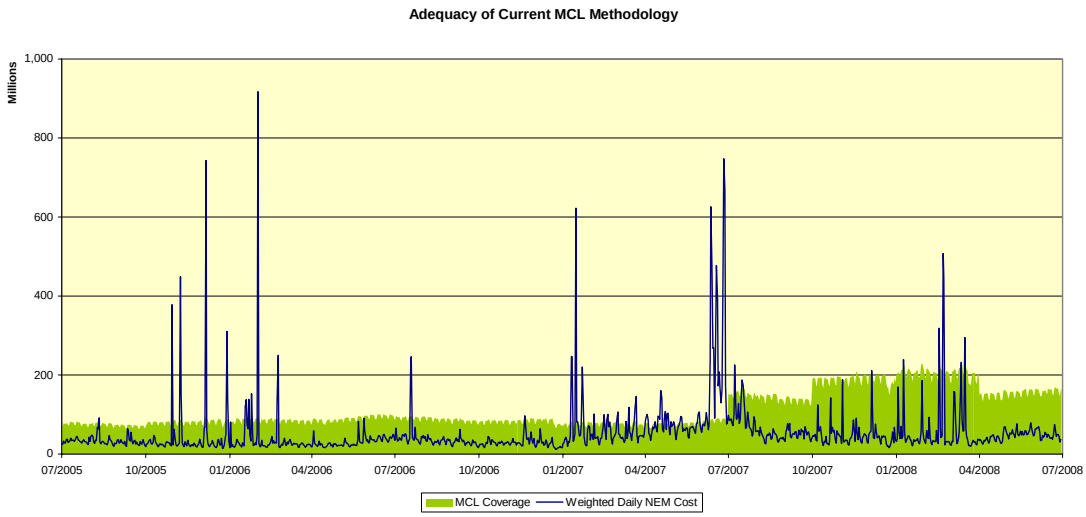


Figure 2.3.1 – Adequacy of Current MCL Methodology

Over the past three financial years, historical pool prices did not reflect the required MCL for approximately 88 days (approximately 8%). This is represented by the blue line exceeding the MCL coverage. It accounts for approximately $10 billion. It is important to note the analysis excludes NEMMCO's daily prudential process of issuing prudential margins and call notices when Market Participants are exceeding their Trading Limit.

In contrast we compared the number of breaches of the MCL by applying futures prices to the same scenario to assess whether the MCL had been efficient in these instances. We applied a futures price equal to one month prior to the quarter start.

Our results indicated that the proposed methodology would have resulted in a higher level of credit support being provided by Market Participants. Therefore, there were less credit support breaches. As a result this may not be an efficient process and a serious consequence rating was applied to the risk that MCL methodology may not be accurate. These results are provided in figure 2.3.2 below:

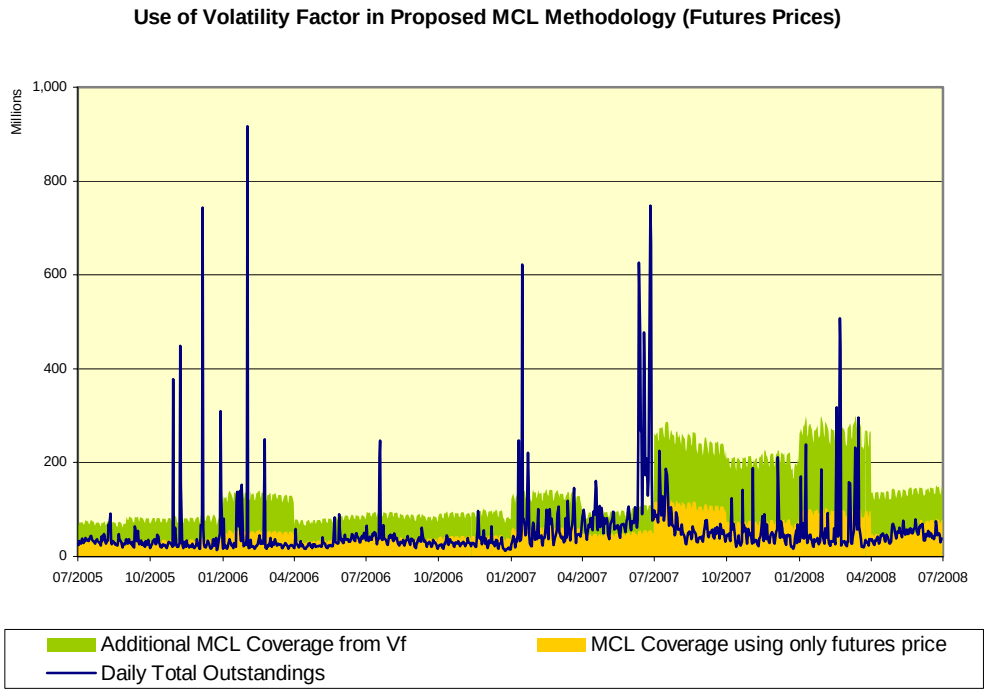


Figure 2.3.2 – MCL coverage using the volatility factor

To determine whether historical prices or futures price better reflect actual NEM spot prices for the quarter, we calculated an average of the historical prices that the MCL was based upon and futures price for the past financial year. The results were annualised over the 2007/2008 financial year.

As highlighted in figure 2.3.3 below the futures price is generally higher than the actual price and the price used to calculate the MCL. This may result in higher levels of credit support being required under the proposed methodology. Therefore, a higher risk rating was applied to the calculation of the MCL with the inclusion of a volatility factor.

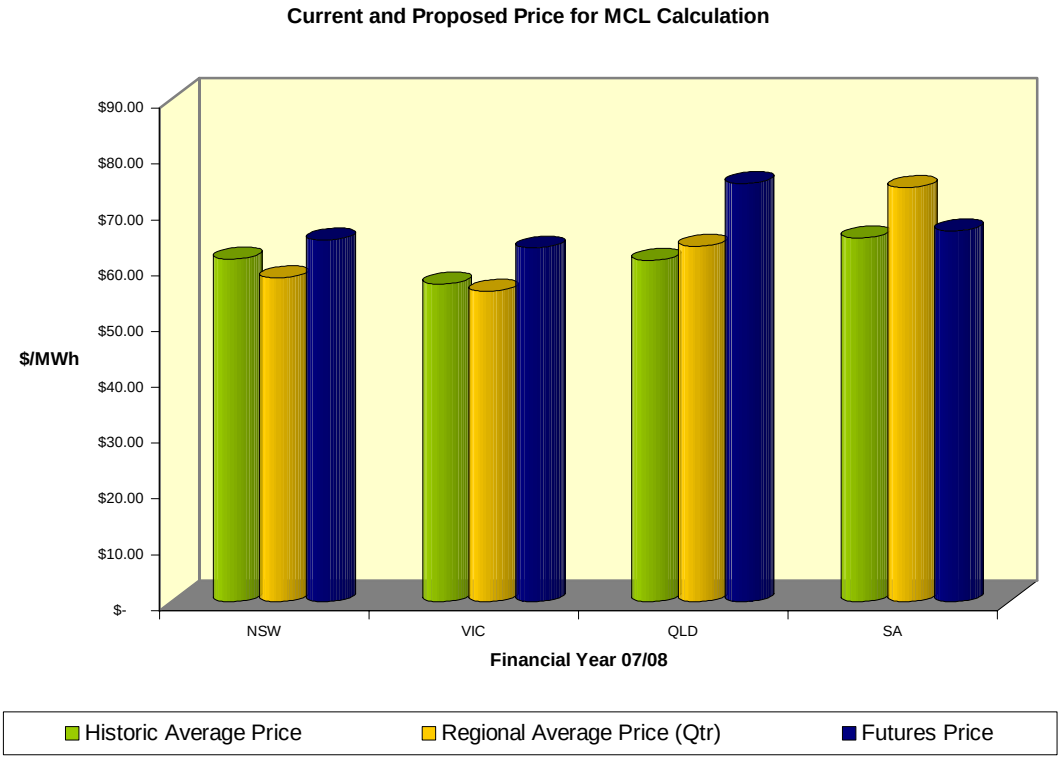
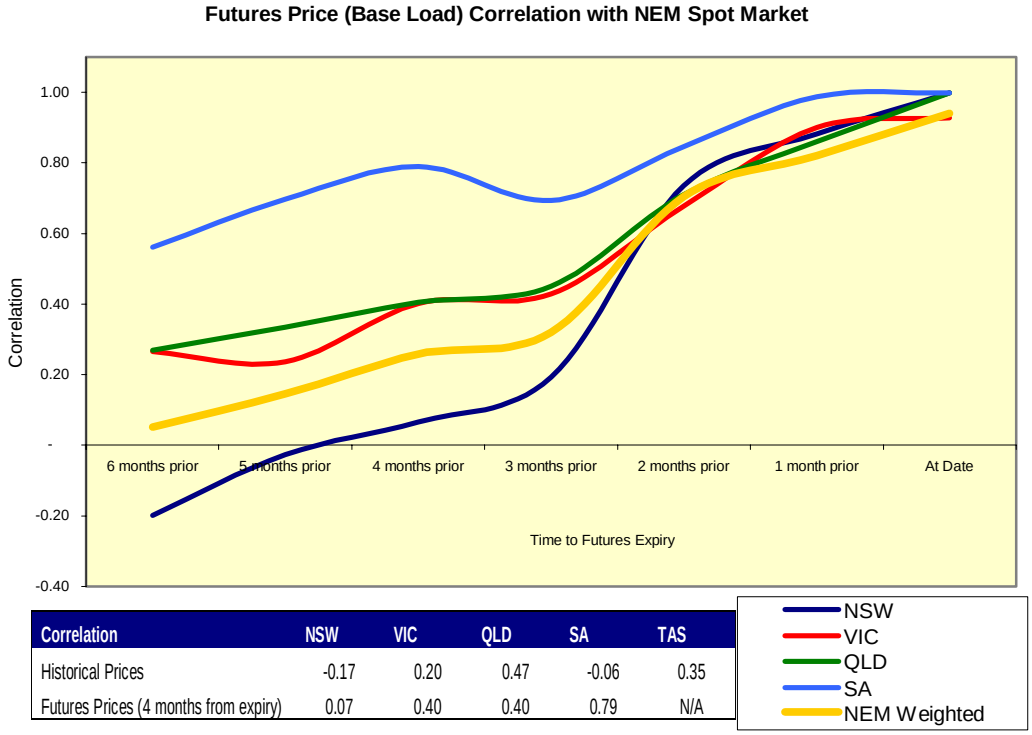


Figure 2.3.3 – Comparison of historical average prices, futures prices and actual spot prices

To determine whether futures price accurately reflects future NEM spot market prices when NEMMCO calculates the MCL for participants, we calculated the correlation between futures prices and actual prices for the past three financial years.

Figure 2.3.4 below highlights that the correlation for the NEM regions four months from expiry, the time at which NEMMCO would calculate the MCL. SA has a relatively strong relationship to actual prices at this time however NSW's relationship is quite low. The correlation for the futures prices to actual prices is higher than the correlation between historical prices and actual prices with the exception of Queensland. This may alter the results of the MCL calculation.



Correlation	NSW	VIC	QLD	SA	TAS
Historical Prices	-0.17	0.20	0.47	-0.06	0.35
Futures Prices (4 months from expiry)	0.07	0.40	0.40	0.79	N/A

Figure 2.3.4 – Correlation between base futures and actual spot prices for past three financial years

2.3.4 Level of prudential exposure may be too high

Outlined below is a summary of the risks that were raised in relation to adequacy of credit support provided by Market Participants to enable security and payment by NEMMCO to generators.

Reference	Risk Category	Risk Description	Risk Rating
MCL P 6	Credit risk	The level of NEMMCO's exposure to settlement risks may not be accurately reflected in the MCL calculation	Medium
FOA 10	Credit risk	Prudential exposure may increase through the reliance of a reduced MCL based on FOA's	Medium
FOA 28	Credit risk	NEMMCO may have insufficient funds for prudential coverage	Low
MCL C 14	Credit risk	Retailers do not provide additional credit support when NEMMCO makes a margin call or a call notice	Low
MCL P 9	Credit risk	Call notices may increase where the futures price is used to calculate the MCL	Low

In order to determine the consequence we estimated the prudential exposure (including the prudential margin) to NEMMCO over a sample of five quarters where high price days occurred. We then quantified the number of times the trading limit would be breached under both methodologies and quantified the value of the trading breaches. The following sample quarters were selected:

- NSW 2007 Quarter 2
- SA 2008 Quarter 1
- QLD 2008 Quarter 1
- VIC 2007 Quarter 1
- VIC 2006 Quarter 1

In performing this analysis we applied the following assumptions:

- Our testing is based on an average size participant operating in one region with an average daily load of 200MW. Further, no reallocations or additional security deposits are held by NEMMCO.
- The proposed MCL methodology is based on the futures price one month prior to the start of the respective quarter.
- Where there is a breach of the participant’s trading limit, we have assumed that NEMMCO have issued a prudential margin notice and received the funds by the next business day.

The following graph, figure 2.3.5, highlights the prudential exposure under the current and proposed MCL methodologies.

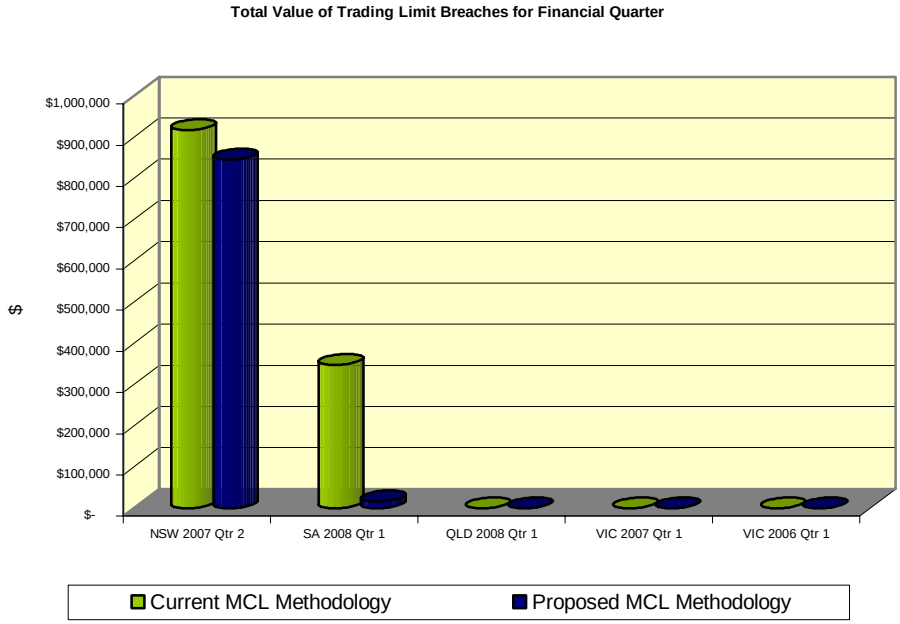


Figure 2.3.5 – Total Value of Trading Limit Breaches for current and proposed MCL methodology

We observed that on average the proposed method provides 35% more coverage for the sample quarters. The average breach amount for the current MCL methodology was approximately $57,000 compared to the proposed MCL methodology with an average breach of $48,000. The lower credit support under the current MCL also increases the frequency of breaches as shown in Figure 2.3.6 below. In relation to MCL P6 a medium risk rating was assigned as the calculation may not be the most accurate method as the level of credit support required may be too high. This should be considered in light of the limited sample quarters that were calculated.

In contrast a medium risk rating was assigned to the risk that the prudential exposure may increase through a reliance on a reduced MCL based on FOA's (FOA 10) due to the risk that NEMMCO may not receive the funds from clearing participants in relation to bank guarantees.

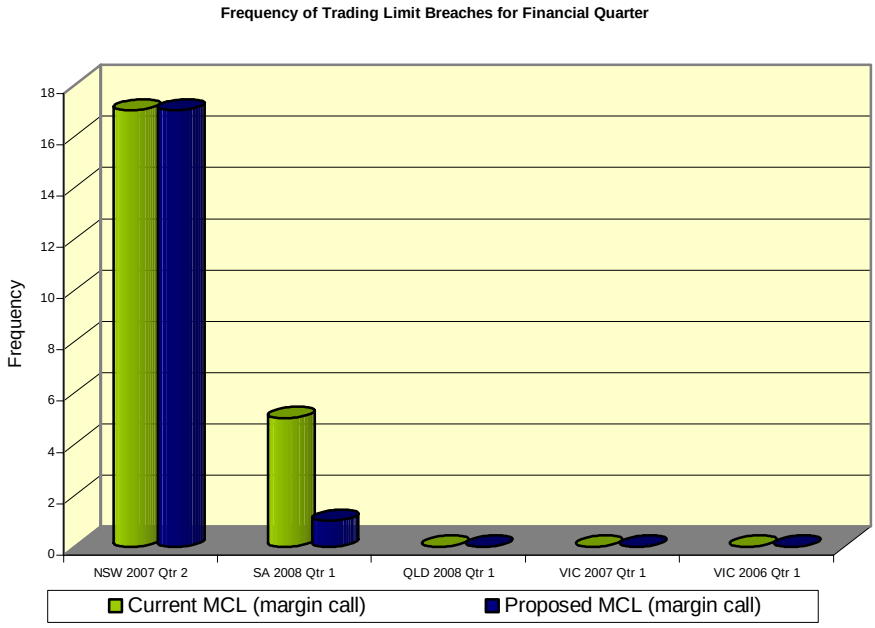


Figure 2.3.6 – Frequency of breaches between current and proposed MCL methodology

We extended this scenario to include the use of FOA payments. To determine the impact we assumed an average futures purchase of 1108MW purchased one month prior to the quarter. We then applied the following scenarios:

- FOA payments received are held by NEMMCO until the futures contract expires
- FOA payments received are withdrawn by the Market Participant when the balance exceeds the minimum amount required by NEMMCO

The following graph highlights the variance in the additional credit support required from the Market Participant.

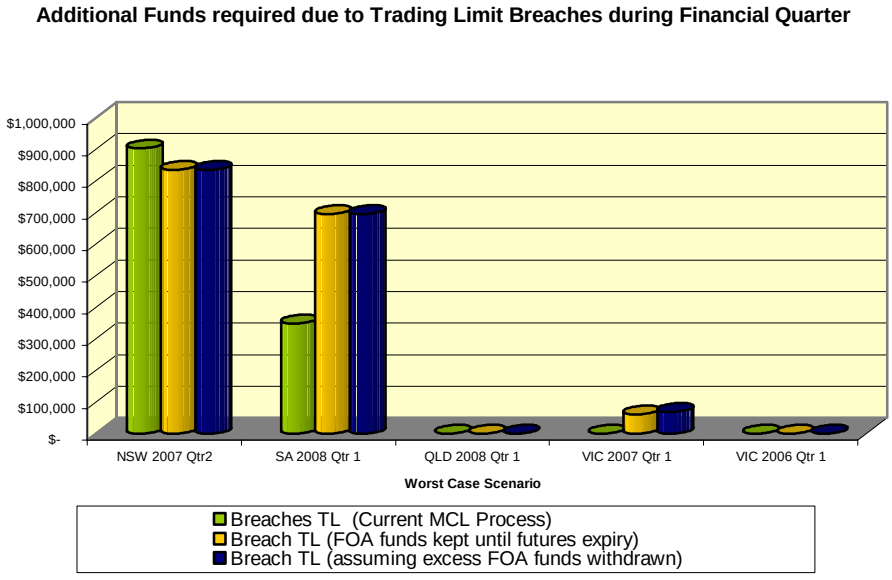


Figure 2.3.7 – Additional Funds required under proposed FOA methodology

In particular, NSW 2007 Quarter 2, additional credit support was required under the proposed FOA methodology to cover trading limit breaches. This may indicate that the FOA payments received are not sufficient to cover all breaches. However, the level of funding provided under futures margins is highly dependent on the time the future contract is purchased as the futures price becomes more accurate towards the actual date. As a result a low risk rating was assigned to those risks in relation to prudential support adequacy (FOA 28, MCL C14 and MCL P9).

In terms of frequency, as shown in the graph below, NEMMCO would be required to issue more prudential margin calls under the proposed FOA methodology. As a result a medium risk rating was assigned to the risks relating to the accuracy of the MCL calculation (MCL P6)

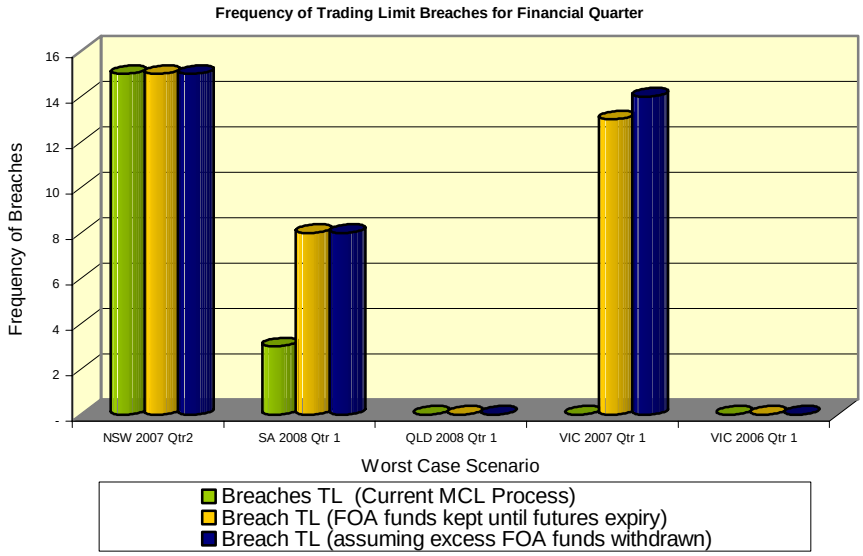


Figure 2.3.8- Frequency of breaches under proposed FOA methodology

2.3.5 Prudential exposure on a weekend or overnight

Outlined below is a summary of the risks that were raised in relation to timing differences that arise over NEMMCO's daily calculation of a Market Participant's current outstandings. This is due to the timing associated with NEMMCO's daily prudential monitoring process. There is a risk that retailers may exceed their trading limit or MCL more quickly on a weekend or overnight under the proposed FOA methodology. This is because the futures price is set at 5pm the previous day, compared to the current method which assesses total outstandings at midnight.

Reference	Risk Category	Risk Description	Risk Rating
MCL C 15	Credit risk	Retailers may exceed their Trading Limit or MCL on a weekend or overnight	Low
FOA 26	Operational risk	Retailers may exceed their Trading Limit or MCL on a weekend of overnight	Low

In order to assign a consequence rating we estimated the level of credit support breaches between the current and proposed process for a sample of high price days post 5pm. The sample quarters selected in section 2.3.4 were used to model this scenario. We also assumed the following:

- Outstandings included the seven day prudential margin
- Our testing is based on an average participant operating in one region with an average daily load of 200MW. Further, no reallocations or additional security deposits are held by NEMMCO.
- The proposed MCL methodology is based on the futures price one month prior to the start of the respective quarter.
- Where there is a breach of the participant's trading limit, we have assumed that NEMMCO have issued a prudential margin notice and received the funds by the next business day.
- The futures purchase was for 1108MW purchased one month prior to quarter start.

The following graph shows the level of credit support breaches an average participant would experience.

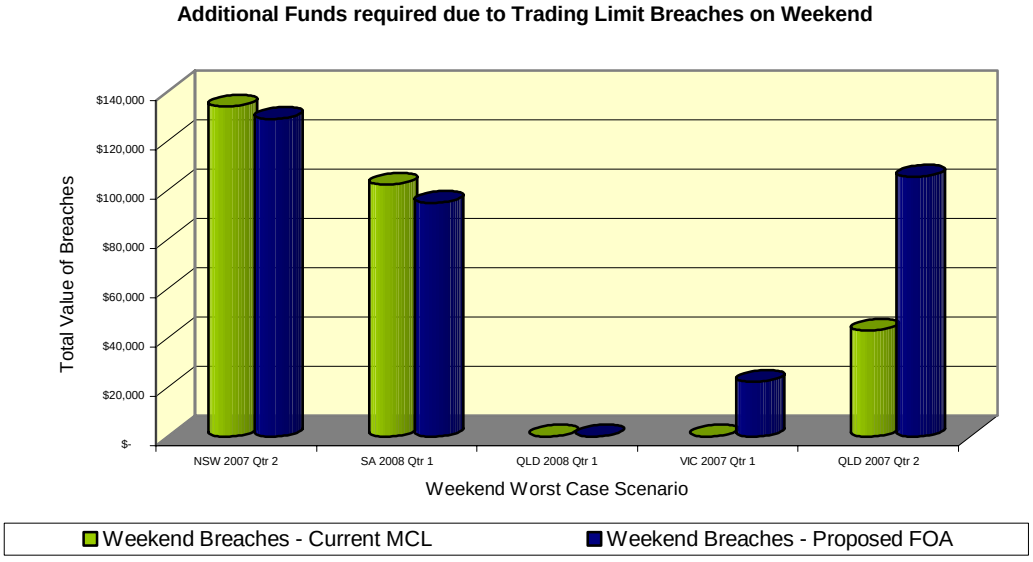


Figure 2.3.9 – Additional Funds required due to Weekend Breaches

Our results have indicated that it is possible for a retailer to breach their trading limit under both the current and proposed MCL methodology. The additional funds required were lower under the proposed MCL methodology with exception of 2007 Quarter 2 in Queensland. Weekend breaches accounted for approximately 5% of the total days in the quarter. As a result both risks were assigned a rating of low.

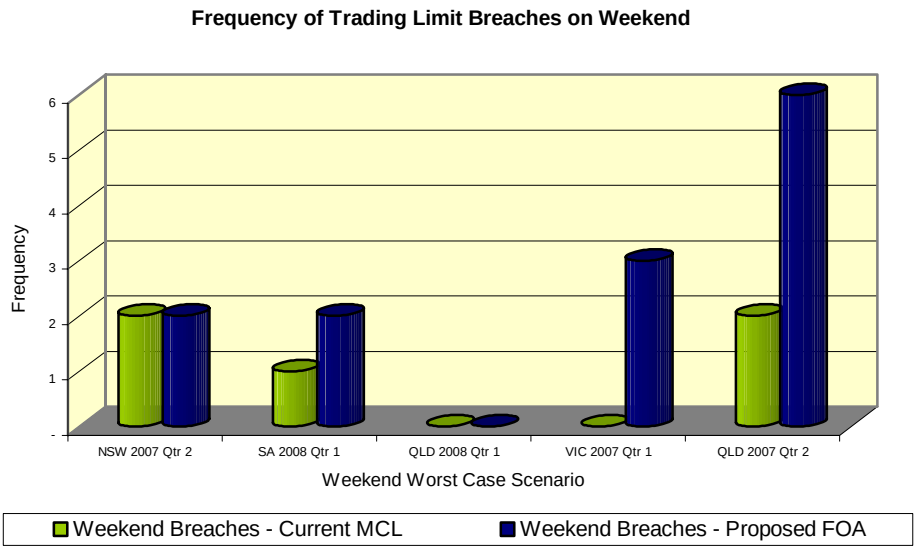


Figure 2.3.10 – Frequency of Trading Limit Breaches on Weekends

2.3.6 Impact of changes in futures market liquidity

The following risks were raised in relation to the liquidity of futures markets across regions.

Reference	Risk Category	Risk Description	Risk Rating
MCL P 8	Market risk	The liquidity of the futures market may create pricing, liquidity and concentration risks, which in turn may result in an inaccurate MCL calculation	Medium
FOA 34	Regulatory risk	The use of FOAs may alter the prudential exposure as the liquidity of futures markets in regions changes over time	Low

We assessed the liquidity of the futures market by comparing the volume of futures to actual NEM traded volumes for each region that has a futures market.

Figure 2.3.11 highlights the liquidity of the futures market as a percentage of the actual demand for each quarter over the past three financial years. The NEM weighted line represents the total futures traded as a percentage of total demand in the NEM. Overall, the liquidity in the futures market has increased. However SA, has a low level of liquidity, whilst Queensland is the most liquid NEM region.

The greatest pricing, liquidity and concentration risk occurs for those regions that have low liquidity. However, as the liquidity in the NEM regions differs between quarters, it is difficult to determine whether the MCL calculation would be accurate. As a result a consequence rating of medium was assigned to the risk that the liquidity of the regions may alter over time which would impact the accuracy of the MCL calculation.

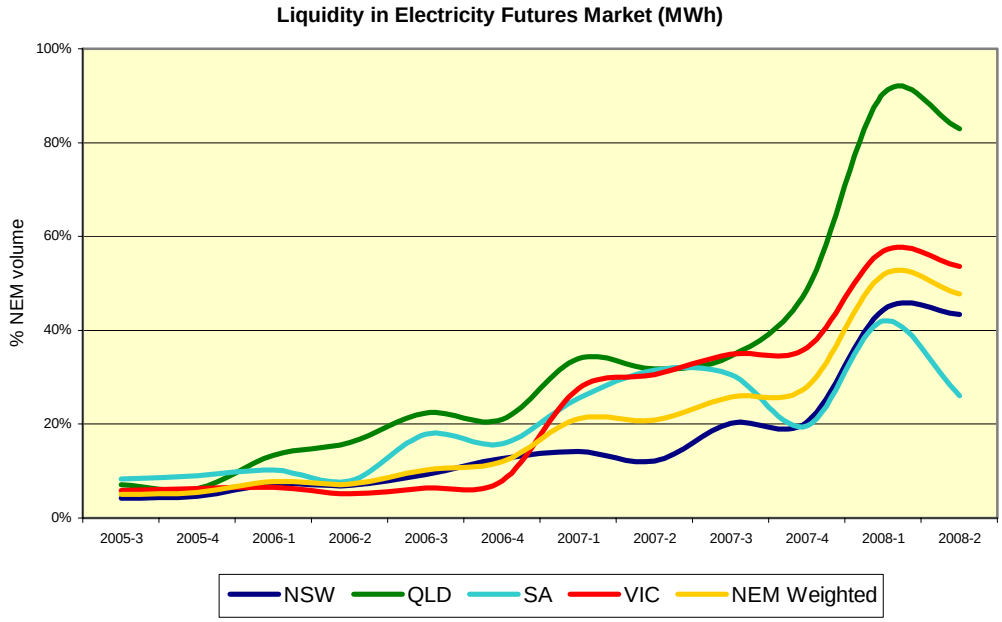


Figure 2.3.11 – Liquidity of Futures Market ($)

To provide an indication on whether the use of FOAs may alter the prudential exposure of the market, we calculated the market's maximum exposure to FOA. We assumed the maximum is equivalent to all available futures contracts being registered under an FOA. The results are shown in the following graph.

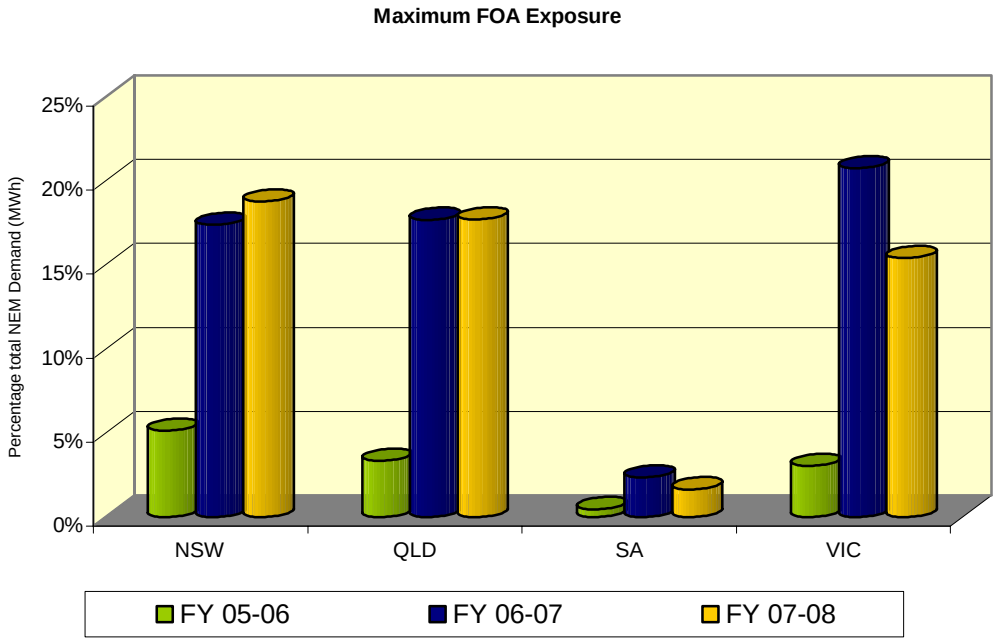


Figure 2.3.12 – Maximum Prudential Exposure to FOAs

Overall, the exposure to FOAs has varied between financial years. However it has not exceeded 25% of a region's demand. The South Australian futures market is the least liquid and the percentage of FOA purchases has not exceeded 2.5% of NEM demand. Therefore, the level of trading in the futures market may not currently impact the prudential MCL calculation. However, this may alter over time of futures trading increases. As such, the prudential exposure to FOAs (FOA 33) was rated low.

2.3.7 Reasonable worse case is not reflected in the current MCL

The NER defines a MCL for a Market Participant as *"a dollar amount determined by NEMMCO on the basis of a 'reasonable worst case' estimate of the aggregate payment for trading amounts (after reallocation) to be made by the Market Participant to NEMMCO over a period of up to the credit period applicable to that Market Participant"*. Further, the reasonable worst case is defined to be *"a position that, while not being impossible, is to a probability level that the estimate would not be exceeded more than once in 48 months"*.

There was a risk raised in relation to the adequacy of the reasonable worst case scenario that is applied to calculate the MCL. We reviewed the high price incidents that have occurred within the market over the past two years to determine whether the reasonable worse case was factored into the MCL calculation.

Reference	Risk Category	Risk Description	Risk Rating
MCL C 17	Credit risk	The reasonable worse case is not accurately reflected in the MCL methodology	Low

In order to quantify the impact we calculated the credit support deficit for the Quarter 2, 2007 incident. This was based on whether the 1 in 48 rule has been exceeded. This incident had a substantial impact on credit support in the market due to high prices and the use of the retailer of last resort scenario. Discussions with Market Participants indicated this was the worst scenario since the market started in 1999.

Due to the ambiguity association with the reasonable worst case definition, it is difficult to determine whether this incident exceeded the reasonable worst case scenario. However, as this was the only scenario that exceeded the reasonable worst case estimate the risk was assigned a rating of low.

2.3.8 Cost of credit support

Outlined below is a summary of the risks that were raised in relation to the ability to attain, and the costs associated with, credit support for Market Participants:

Reference	Risk Category	Risk Description	Risk Rating
MCL C 1	Market risk	New entrants do not enter the market due to the high cost (price of finance through bank guarantees and reallocations) in obtaining credit support	Medium
FOA 22	Market risk	New entrants do not enter the market due to the high cost (price of finance through bank guarantees and reallocations) in obtaining credit support	Medium
MCL C 10	Credit risk	There are a limited number of banks for credit support	Medium
FOA 19	Credit risk	There are a limited number of banks for credit support	Medium
MCL C 3	Market risk	Treasury Corporations may not be required to provide credit support in the longer term. It could increase the cost of obtaining credit.	Medium

A number of risks were raised in relation to the difficulty of obtaining credit support in order to enter and participate in the NEM.

Discussions with Market Participants, including the proponents, indicated that the cost of credit support is approximately equal to the weighted average cost of capital plus an additional premium. The average cost of credit support ranged between 15 and 20%. However, this did not necessarily prevent new participants from entering the market. However, when compared to graph 2.3.13 below, a lower number of participants have entered the NEM as credit costs have increased. As a result this may prevent new entrants from entering the market and a medium rating was assigned to the risks that new entrants do not enter the market.

The following graph (figure 2.3.13) shows the average cost of credit support for Market Participants. The average cost of credit support is based on total bank guarantees held by NEMMCO, it does not take into account credit support obtained through security deposits or reallocations. Although the average credit support has been increasing, new entrants have still entered the market. However, the cost of credit support has been rising at a higher rate than the number of new participants.

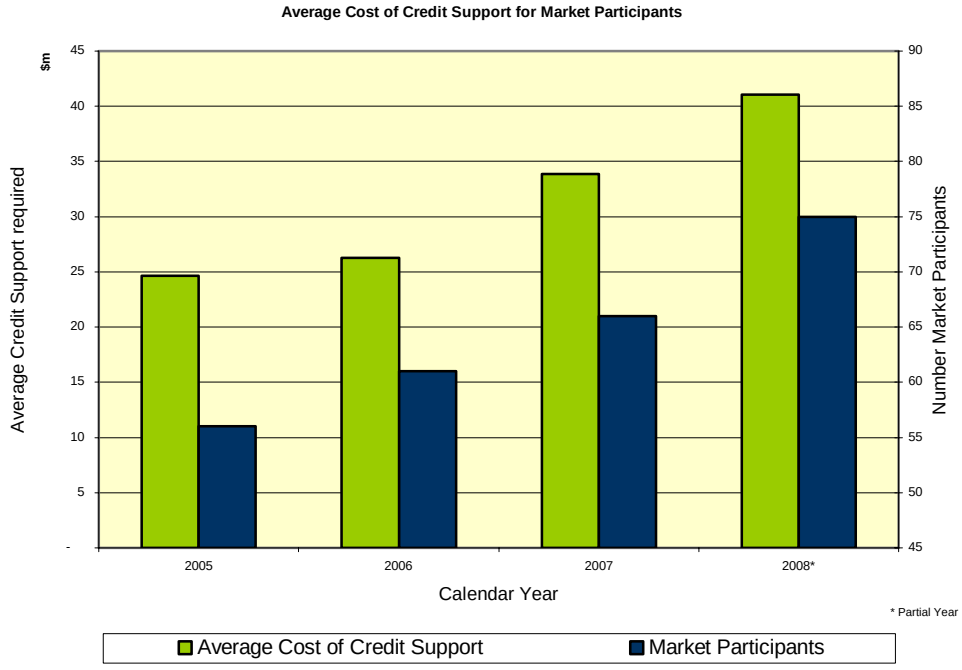


Figure 2.3.13 – Cost of Credit Support in the NEM

We quantified the number of banks who provide credit support. Discussions with NEMMCO indicate that up to twenty banks have provided credit support on behalf of Market Participants. These banks are required to meet the acceptable credit criteria outlined in Section 3.3.4 of the NER. These banks comprise both domestic and international institutions. We acknowledge that the number of banks tends to fluctuate after each MCL review. As a result a risk rating of medium was assigned as there are a limited number of organisations from which to obtain credit support.

Further, we reviewed the total value of credit support that is obtained from Treasury Corporations. We compared the level of treasury support guarantees to total credit support guarantees held by NEMMCO and noted that over the past three financial years, support from treasury corporations has been declining (see Figure 2.3.14). Treasury Corporations currently provide over 50% of the total credit guarantee in the NEM. However, this may change if NSW privatisation is introduced.

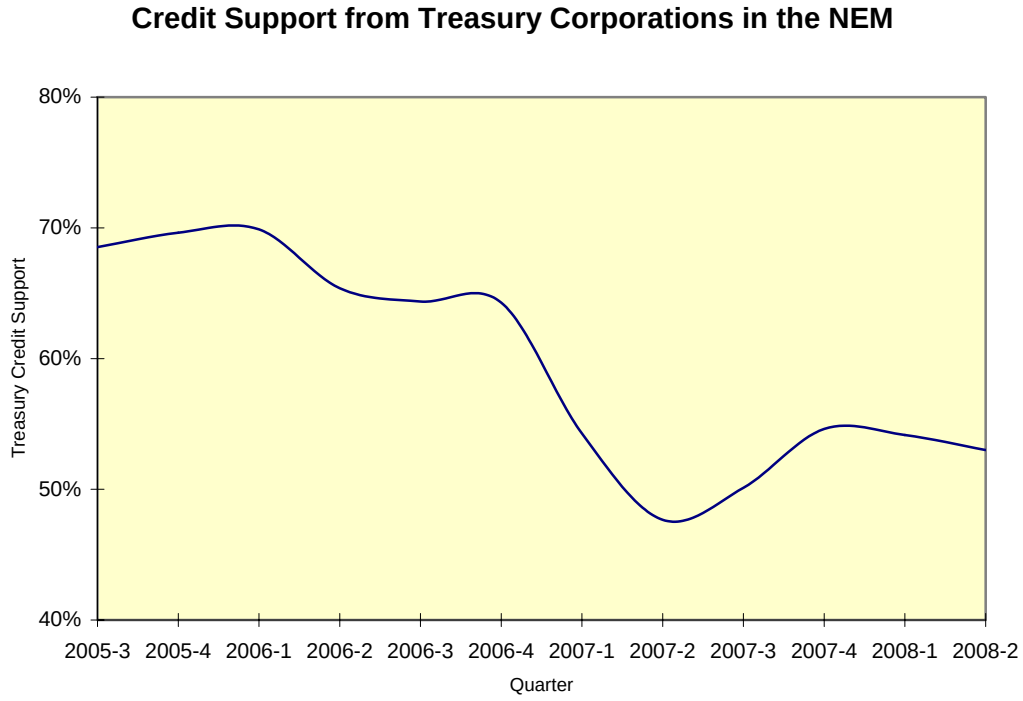


Figure 2.3.14 – Treasury Support Guarantee

2.3.9 Reallocation transactions

A number of risks were raised in relation to reallocation transactions. It should be noted that the risks assessment was based on current processes. We have not considered the new reallocation procedures which will encompass the revised reallocation categories. These risks are summarised below:

Reference	Risk Category	Risk Description	Risk Rating
MCL C 8	Credit risk	Generators may be unable to pay NEMMCO for reallocation transactions where plant failure, transmission outages occur or reallocation agreement is insufficient	Medium
FOA 21	Credit risk	Generators may be unable to pay NEMMCO for reallocation transactions when plant failures, transmission outages occur or reallocation agreement is insufficient	Medium
MCL C 9	Credit risk	Reallocation guarantee may be insufficient	Medium
FOA 17	Credit risk	Reallocation guarantee may be insufficient	Medium
MCL C 4	Market risk	Reallocations are more suited to base load generators	Medium
FOA 16	Market risk	Reallocations are more suited to base load generators	Medium
MCL C 11	Credit risk	Retailers may pay high cost for reallocation	Medium
FOA 24	Credit risk	Retailers may pay high cost for reallocation	Medium
MCL C 18	Credit risk	NEM retailers may seek their own default and suspension from NEMMCO	Low
FOA 35	Regulatory risk	NEM retailers may seek their own default and suspension from NEMMCO	Low
MCL C 20	Credit risk	Market Participants may pay high fees to cancel reallocations	Low
FOA 37	Market risk	Market Participants may pay high fees to cancel reallocations	Low

The risks raised predominately related to the adequacy of reallocation transactions to provide the required credit support.

In particular, a generator that has reallocations and is operating close to their trading limit has the highest potential to breach credit support requirements. This is because credit support is based on the seven day prudential margin. To test the financial impact for reallocation transactions when a generator stops generating we determined the number of trading intervals needed for the prudential margin to be exceeded.

Our analysis is based on the following assumptions:

- a generator with an average daily load of 200MW at varying amounts of reallocation (100%, 50% and 25% of load).
- Average settlement period of 32 days

Our results are outlined in Figure 2.3.15. The first row of each table represents the price (including volatility factor) used by NEMMCO in the MCL calculation, whilst the left hand column represents the varying settlement prices. For example, it would take a generator, who is fully reallocated, 1.68 trading intervals to exceed their prudential margin if the MCL was based on $50 and the market price averaged VoLL for the trading intervals. This equates to approximately 50 minutes.

Discussions with NEMMCO indicate over the past financial year, MCL prices (inclusive of the volatility factor) have ranged between $110-$285.

The areas shaded yellow in Figure 2.3.15 represents the intra-day risk, whereby, a breach could occur before being identified by NEMMCO's daily prudential monitoring process. In contrast, the dark grey shaded area represents scenarios that should not occur, as the average

settlement period has been exceeded. Further, the areas in white would be identified and addressed as part of NEMMCO's daily prudential monitoring process.

A risk rating of medium was assigned to the risk that reallocations guarantees may be insufficient and that generators may not pay settlements owed due to the intra day risk in falling below reallocation guarantee.

Generator Scenario 1 - 100% reallocated 1536

	Price in MCL Calculation (Price*Volatility Factor)					
Settlement Price	$ 50	$ 100	$ 150	$ 200	$ 300	$ 400
$10,000	1.68	3.36	5.04	6.72	10.08	13.44
$5,000	3.36	6.72	10.08	13.44	20.16	26.88
$2,500	6.72	13.44	20.16	26.88	40.32	53.76
$1,250	13.44	26.88	40.32	53.76	80.64	107.52
$625	26.88	53.76	80.64	107.52	161.28	215.04
$312	53.85	107.69	161.54	215.38	323.08	430.77
$165	101.82	203.64	305.45	407.27	610.91	814.55
$78	215.38	430.77	646.15	861.54	1292.31	1723.08
$39	430.77	861.54	1292.31	1723.08	2584.62	3446.15

Generator Scenario 2 - 50% reallocated

	Price in MCL Calculation (Price*Volatility Factor)					
Settlement Price	$ 50	$ 100	$ 150	$ 200	$ 300	$ 400
$10,000	0.84	1.68	2.52	3.36	5.04	6.72
$5,000	1.68	3.36	5.04	6.72	10.08	13.44
$2,500	3.36	6.72	10.08	13.44	20.16	26.88
$1,250	6.72	13.44	20.16	26.88	40.32	53.76
$625	13.44	26.88	40.32	53.76	80.64	107.52
$312	26.92	53.85	80.77	107.69	161.54	215.38
$165	50.91	101.82	152.73	203.64	305.45	407.27
$78	107.69	215.38	323.08	430.77	646.15	861.54
$39	215.38	430.77	646.15	861.54	1292.31	1723.08

Generator Scenario 3 - 25% reallocated

	Price in MCL Calculation (Price*Volatility Factor)					
Settlement Price	$ 50	$ 100	$ 150	$ 200	$ 300	$ 400
$10,000	0.43	0.84	1.27	1.68	2.52	3.36
$5,000	0.86	1.68	2.54	3.36	5.04	6.72
$2,500	1.73	3.36	5.09	6.72	10.08	13.44
$1,250	3.46	6.72	10.18	13.44	20.16	26.88
$625	6.91	13.44	20.35	26.88	40.32	53.76
$312	13.85	26.92	40.77	53.85	80.77	107.69
$165	26.18	50.91	77.09	101.82	152.73	203.64
$78	55.38	107.69	163.08	215.38	323.08	430.77
$39	110.77	215.38	326.15	430.77	646.15	861.54

Intra-day risk
Administered Pricing would occur
Average Trading intervals in credit period exceeded

Figure 2.3.15 – Number of trading intervals (half hours) until the Prudential Margin is exceeded for a generator on 200MW daily load

In contrast we assessed the impact on retailers to determine how long it would take for retailers to exceed the level of credit support they provide under reallocation transactions. The analysis takes into account the NEMMCO credit requirements for retailers. Our analysis is based on the following two scenarios:

- A retailer with an average daily load of 200MW and no generation
- A retailer with an average daily load of 200MW and 100MW of daily generation

Our results are outlined in Figure 2.3.16. Our analysis indicated it would take a retailer a longer period of time to exceed their reallocation transactions due to additional credit support requirement for retailers as compared to generators.

A risk rating of medium was assigned to the risk that reallocations guarantees may be insufficient and that retailers may not pay settlements owed due to the intra day risk in falling below reallocation guarantee. In contrast a risk rating of low was assigned to the risk that retailers may seek their own default (MCL C18 and FOA 35) as this was not considered a viable option based on a business model of retail electricity sales.

Retail Scenario - No generation						1536
	Price in MCL Calculation (Price*Volatility Factor)					
Settlement Price	$ 50	$ 100	$ 150	$ 200	$ 300	$ 400
$10,000	1.94	3.89	5.83	7.75	11.64	15.53
$5,000	3.89	7.78	11.66	15.50	23.28	31.06
$2,500	7.78	15.55	23.33	31.01	46.56	62.11
$1,250	15.55	31.10	46.66	62.02	93.12	124.22
$625	31.10	62.21	93.31	124.03	186.24	248.45
$312	62.31	124.62	186.92	248.46	373.08	497.69
$165	117.82	235.64	353.45	469.82	705.45	941.09
$78	249.23	498.46	747.69	993.85	1492.31	1990.77
$39	498.46	996.92	1495.38	1987.69	2984.62	3981.54

Retail Scenario - Generation of 100MW						1536
	Price in MCL Calculation (Price*Volatility Factor)					
Settlement Price	$ 50	$ 100	$ 150	$ 200	$ 300	$ 400
$10,000	0.96	1.94	2.90	3.89	5.83	7.75
$5,000	1.92	3.89	5.81	7.78	11.66	15.50
$2,500	3.84	7.78	11.62	15.55	23.33	31.01
$1,250	7.68	15.55	23.23	31.10	46.66	62.02
$625	15.36	31.10	46.46	62.21	93.31	124.03
$312	30.77	62.31	93.08	124.62	186.92	248.46
$165	58.18	117.82	176.00	235.64	353.45	469.82
$78	123.08	249.23	372.31	498.46	747.69	993.85
$39	246.15	498.46	744.62	996.92	1495.38	1987.69

Intra-day risk
Administered Pricing would occur
Average Trading intervals in credit period exceeded

Figure 2.3.16 – Number of Trading Intervals required to exceed the Prudential Margin for a retailer on 200MW daily load

Additional risks were raised in relation to the ability to obtain reallocation transactions. In particular, that reallocations were limited to base load generators. Discussions with NEMMCO indicated that approximately 95% of reallocation transactions are entered into with baseload generators. This is consistent with the level of generation provided by baseload generators which is approximately 95%. We also noted that approximately 6-8% of NEM demand is used for reallocation transactions with approximately one third of NEM participants using reallocations to some extent (fully or partially reallocated).

In addition, there was a risk raised that reallocation transactions were costly to obtain. We selected a sample of five retailers spanning small, medium and large retailers with varying ownership structures and noted that reallocation transactions were attainable. Negotiations with generators meant that the prices for reallocation transactions ranged between $0.50/MWh and $3.00/MWh, averaging at $1.00/MWh. Further discussions at the AEMC risk workshop indicated that the price paid for reallocations may include additional benefits. The cost of reallocations may also depend on the individual retailer's credit risk.

An additional risk was raised in relation to the cost of cancelling reallocation transactions. Discussions with a sample of retailers indicated that reallocations are beneficial for retailers and were rarely cancelled. Further, it was stated that minimal costs were incurred in cancelling reallocations.

2.3.10 Implementation timeframe for rule change

Outlined below is a summary of the risks that were raised in relation to the ability of NEMMCO to meet the deadline defined in the rule change.

Reference	Risk Category	Risk Description	Risk Rating
MCL P 5	Implementation risk	NEMMCO may not have sufficient time to change systems and processes prior to Rule change	Medium
FOA 11	Implementation risk	NEMMCO and Market Participants may not have sufficient time to change systems and processes prior to Rule change	Medium
FOA 13	Operational risk	FOAs are not registered properly and in a timely manner	Medium
FOA 14	Implementation risk	Call notices are not issued in a timely manner due to tight timeframe	Medium

Discussions with NEMMCO indicate that the rule change will require system changes in order to automate the process. In particular, they indicated that they would require approximately 2-4 months notification to ensure systems and processes meet the proposed MCL rule change requirements. Due to the additional interfaces required for the proposed FOA process, NEMMCO indicated that they would require approximately 9 months notification to develop systems and processes for the proposed FOA rule change requirement. However, both these timeframes were dependent upon the final rule determination.

2.3.11 Agreement by Clearing Members

Outlined below is a summary of risks that was raised in relation to the willingness of Clearing Participants to enter into the proposed arrangement.

Reference	Risk Category	Risk Description	Risk Rating
FOA 9	Market risk	Clearing Members may not wish to enter into proposed arrangements	Medium
FOA 31	Market risk	Clearing Members might not have sufficient prudential coverage for entering into the NEM	Low

We spoke with a representative of a Clearing Member and noted that the Clearing Member was concerned with how the proposed rule would operate in practice. In particular, the Clearing Member was interested in the legal aspects of the proposed rule change. As a result this risk will form part of the legal consideration being undertaken by the AEMC. However, they were supportive of the rule change as a principal. As a result a medium rating was assigned to this risk.

In addition, we reviewed the trading requirements of the SFE. We found that the prudential coverage for Clearing Members included:

- holding liquid capital greater than its total risk requirements, and having a core liquid capital not less than $100,000
- maintain a minimum net tangible assets of $5 million
- maintain professional indemnity insurance to a level that the participant deems reasonably adequate

2.3.12 Unquantified risks

Outlined below is a summary of risks that we were unable to quantify based on qualitative or quantitative evidence.

These matters relate to the design of the NEM and the foundations under which prudential support requirements have been established. As a result we have been unable to predict the actions of Market Participants in these instances to provide a meaningful estimate of consequence and therefore overall risk. However, we have assigned *indicative* consequence and likelihood ratings based on inferences drawn from public submissions, discussions held with stakeholders and observations made throughout the engagement.

Reference	Risk Category	Risk Description	Risk Rating
MCL C 2	Market risk	The reallocation process does not provide pricing signals to the market	Medium
MCL C 6	Market risk	The reallocation process is not based on transparent market information relating to pricing and quantity	Medium
MCL C 7	Credit risk	Generators may not have sufficient credit support for reallocation	Medium
MCL C 13	Market risk	Vertical integration may reduce the level of competition in the market in the future	Low
FOA 34	Market risk	The price of generation may increase on the basis of varying credit risk	Medium
MCL C 16	Credit risk	Retailers reveal their trading and underlying financial position to generators when using the reallocation process	Low
MCL C 19	Credit risk	Pool prices may increase when retailer does not meet reallocation obligations	Low
MCL C 22	Market risk	Retail costs may increase due to high cost of participation in the NEM	Low
FOA 8	Market risk	Regions with no futures markets may be adversely impacted. Risk of concentration in FOA markets	Low
FOA 29	Credit risk	Retailers reveal their trading and underlying financial position to generators when using the reallocation process	Low
FOA 32	Market risk	Credit of the overall market might decrease as undercapitalised entities enter the market.	Low
FOA 36	Market risk	Pool prices may increase when retailer does not meet reallocations	Low
FOA 39	Market risk	Retail costs may increase due to high cost of participation in the market	Low
FOA 41	Market risk	Vertical integration may reduce the level of competition in the market in the future	Low

Appendix A – Risk Register

Outlined below are the risks associated with:

- The current maximum credit limit (MCL) process (including reallocations)
- The proposed MCL
- The proposed futures offset arrangements

It should be noted that the risks are repeated in the categories where the operation of the market will not change where the rule change is implemented.

Summary of Risks: AEMC Rule Determination - Current MCL

	Identifying Stakeholder	Risk Category	Risk Description	Likelihood Rating	Consequence Rating	Rating	Quantifiable	Method to quantify
MCL C 1	Proponents	Market risk	New entrants do not enter the market due to the high cost (price of finance through bank guarantees and reallocations) in obtaining credit support	Possible	Serious	Medium	Yes	Estimate the cost of credit support of entering the market for a new participant based on predefined data (average amount of electricity purchased in a year compared to average number of sales). In addition, quantify the number of new entrants since market start.
MCL C 2	Proponents	Market risk	The reallocation process does not provide pricing signals to the market	Almost Certain	Moderate	Medium	No*	NA
MCL C 3	Proponents	Market risk	Treasury Corporations may not be required to provide credit support in the longer term. It could increase the cost of obtaining credit.	Likely	Serious	Medium	Yes	Quantify the credit exposure to these banks (where possible)
MCL C 4	Proponents	Market risk	Reallocations are more suited base load generators	Likely	Moderate	Medium	Yes	Calculate percentage of reallocations for baseload generators
MCL C 5	Proponents	Market risk	There are a lack of participants to enter into reallocation arrangements	Possible	Serious	Medium	Yes	Calculate an estimate of the number of NEM participants that use the reallocation mechanism.
MCL C 6	Proponents	Market risk	The reallocation process is not based on transparent market information relating to pricing and quantity	Almost Certain	Moderate	Medium	No*	NA
MCL C 7	Proponents	Credit risk	Generators may not have sufficient credit support for reallocation	Possible	Serious	Medium	No*	NA
MCL C 8	Proponents	Credit risk	Generators may be unable to pay NEMMCO for reallocation transactions when plant failures, transmission outages occur or reallocation agreement is insufficient	Possible	Moderate	Medium	Yes	Calculate how long would it take for generators to fall below the reallocation amount in case of high prices taking into account NEMMCO credit requirements for generation
MCL C 9	Proponents	Credit risk	Reallocation guarantee may be insufficient	Possible	Moderate	Medium	Yes	Calculate the financial impact for reallocation when a generator stops generating
MCL C 10	Proponents	Credit risk	There are a limited number of banks to provide credit support	Possible	Moderate	Medium	Yes	Quantify the number of banks who provide credit support
MCL C 11	Proponents	Credit risk	Retailers may pay high costs for reallocations	Possible	Moderate	Medium	Yes	Determine the average cost of reallocations
MCL C 12	Proponents	Credit risk	The historical average pool price does not reflect the required MCL	Possible	Moderate	Low	Yes	Quantify the number of times the historical data used to calculate the MCL has not been adequate to cover the MCL compared with actual prices. Determine an estimated dollar impact of the variance.
MCL C 13	Proponents	Market risk	Vertical integration may reduce the level of competition in the market in the future	Possible	Moderate	Low	No*	NA
MCL C 14	NEMMCO	Credit risk	Retailers do not provide additional credit support when NEMMCO makes a margin call or a call notice	Possible	Moderate	Low	Yes	Estimate the prudential exposure (including the prudential margin to NEMMCO) over a sample of high price days for a reasonable worst case scenario
MCL C 15	NEMMCO	Credit risk	Retailers may exceed their Trading Limit or MCL on a weekend or overnight	Possible	Moderate	Low	Yes	Estimate the maximum difference of time exposure between current and proposed process for a sample of high price days post 5pm (including the seven day reaction time)
MCL C 16	Proponents	Credit risk	Retailers reveal their trading and underlying financial position to generators when using the reallocation process	Possible	Moderate	Low	No*	NA
MCL C17	International Power	Credit risk	The reasonable worse case is not accurately reflected in the MCL methodology	Unlikely	Moderate	Low	Yes	Calculate the exposure on the Q22007 incident. Determine whether the 1 in 48 rule has been exceeded.

Summary of Risks: AEMC Rule Determination - Current MCL								
	Identifying Stakeholder	Risk Category	Risk Description	Likelihood Rating	Consequence Rating	Rating	Quantifiable	Method to quantify
MCL C 18	Proponents	Credit risk	NEM retailers may seek their own default and suspension from NEMMCO	Unlikely	Moderate	Low	Yes	Calculate how long would it take for retailers to fall below the reallocation amount in case of high prices taking into account NEMMCO credit requirements for retailers
MCL C 19	Proponents	Credit risk	Pool prices may increase when retailer does not meet reallocation obligations	Rare	Moderate	Low	No*	NA
MCL C 20	Proponents	Credit risk	Market Participants may pay high fees to cancel reallocations	Unlikely	Moderate	Low	Yes	Determine the cost with participants to cancel reallocations
MCL C 21	Proponents	Credit risk	Reallocations may be subject to clawback	Possible	Moderate	Low	No*	AEMC to consider as part of legal review
MCL C 22	Proponents	Market risk	Retail costs may increase due to high cost of participation in the NEM	Possible	Moderate	Low	No*	NA
MCL C 23	Proponents	Regulatory risk	NEMMCO may not have a legal right to keep the funds provided under bank guarantees or security deposit arrangements by a NEM participant in normal, settlement or credit default	Possible	Moderate	Low	No*	AEMC to consider as part of legal review

* NB - The ratings for the risks that have not been quantified are indicative ratings based on inferences drawn from the public submissions, observations made throughout the engagement and discussions held with key stakeholders.

Summary of Risks: AEMC Rule Determination - Proposed MCL								
	Identifying Stakeholder	Risk Category	Risk Description	Likelihood Rating	Consequence Rating	Rating	Quantifiable	Method to quantify
MCL P 1	Deloitte	Implementation risk	Market Participants do not understand the basis for the MCL calculation	Almost Certain	Serious	High	Yes	Select a sample of participants, proponents and NEMMCO to gauge understanding of the proposed rule change
MCL P 2	Proponents	Implementation risk	Proposed Rules and Procedures do not adequately define the processes and requirements	Almost Certain	Serious	High	Yes	Select a sample of participants, proponents and NEMMCO to gauge understanding of the proposed rule change
MCL P 3	NEMMCO	Implementation	Proposed Rules or procedures do not adequately define the requirements. It is unclear what will be defined in Rules compared to procedures.	Almost Certain	Serious	High	No*	NA
MCL P 4	NEMMCO	Credit risk	MCL might not be accurate as it is calculated with a Volatility Factor determined quarterly per region, and this Volatility Factor might already be considered in the price of futures	Almost Certain	Serious	High	Yes	Compare the number of times the trading limit would be breached with and without the use of a volatility factor
MCL P 5	NEMMCO	Implementation risk	NEMMCO may not have sufficient time to change systems and processes prior to Rule change	Possible	Serious	Medium	Yes	Determine through interview with NEMMCO the time required to implement the proposed change
MCL P 6	NEMMCO	Credit risk	The level of NEMMCO's exposure to settlement risks may not be accurately reflected in the MCL calculation	Likely	Serious	Medium	Yes	Quantify the number of times the trading limit would be breached under the proposed methodology for a sample period. Quantify the value of the trading breaches.
MCL P 7	NEMMCO International Power NGF Energy Australia	Credit risk	The MCL is inaccurate as the futures prices do not accurately reflect future NEM spot market prices	Possible	Moderate	Low	Yes	Estimate the strength of relationship of spot prices with futures prices by determining the strength of relationship at varying futures times e.g. 1 day before period, 1 month etc
MCL P 8	NEMMCO	Market risk	The liquidity of the futures market may create pricing, liquidity and concentration risks, which in turn may result in an inaccurate MCL calculation	Possible	Moderate	Low	Yes	Determine the liquidity of the futures market by comparing the volume of futures to actual NEM traded volumes for each region that has a futures market
MCL P 9	NEMMCO	Credit risk	Call notices may increase where the futures price is used to calculate the MCL	Possible	Moderate	Low	Yes	Calculate the number of trading breaches for a sample period between the current and proposed MCL

* NB - The ratings for the risks that have not been quantified are indicative ratings based on inferences drawn from the public submissions, observations made throughout the engagement and discussions held with key stakeholders.

Summary of Risks: AEMC Rule Determination - FOAs								
	Identifying Stakeholder	Risk Category	Risk Description	Likelihood Rating	Consequence Rating	Rating	Quantifiable	Method to quantify
FOA 1	Deloitte	Implementation risk	Proposed FOA process is not understood by Market Participants, NEMMCO and Clearing Participants	Almost Certain	Serious	High	Yes	Select a sample of participants, proponents and NEMMCO to gauge understanding of the proposed rule change
FOA 2	NEMMCO	Implementation/Regulatory risk	FOA contracts may not be paid to NEMMCO by Clearing Members / Counterparties	Likely	Extreme	High	No*	AEMC to consider as part of legal review
FOA 3	NEMMCO	Implementation/Credit risk	NEMMCO may have insufficient coverage if an underlying FOA is sold or terminated by the Market Participants	Likely	Extreme	High	No*	AEMC to consider as part of legal review
FOA 4	NEMMCO	Implementation/Regulatory risk	NEMMCO may not have a legal right to keep the funds provided under an FOA contract by NEM participant in normal, settlement or credit default (e.g. – clawback)	Likely	Extreme	High	No*	AEMC to consider as part of legal review
FOA 5	NEMMCO International Power	Implementation/Credit risk	Clearing Members does not pay in a timely manner as they are not bound by the NEM rules	Likely	Extreme	High	No*	AEMC to consider as part of legal review
FOA 6	NEMMCO	Implementation/Market risk	NEMMCO may not receive FOA payment due to Clearing House not being able to isolate daily movements in underlying electricity futures contracts	Almost Certain	Serious	High	No*	AEMC to consider as part of legal review
FOA 7	NEMMCO	Implementation/Market risk	NEMMCO may not receive funds due to Clearing Members withholding payment from clients	Likely	Extreme	High	No*	AEMC to consider as part of legal review
FOA 8	AEMC	Implementation risk	Proposed Rules and Procedures do not adequately define the processes and requirements	Likely	Serious	Medium	Yes*	Sample participants, proponents and NEMMCO to gauge understanding of the proposed MCL calculation and methodology
FOA 9	NEMMCO	Market risk	Clearing Members may not wish to enter into proposed arrangements	Possible	Serious	Medium	Yes	Determine through discussion with d-cyphaTrade and a Clearing Member the willingness of Clearing Members to enter the agreements
FOA 10	NEMMCO	Credit risk	Prudential exposure may increase through the reliance of a reduced MCL based on FOA's	Likely	Extreme	Medium	Yes	Calculate the variance for a sample period between the current and proposed MCL and a sample of FOA payments
FOA 11	NEMMCO	Implementation risk	NEMMCO and Market Participants may not have sufficient time to change systems and processes prior to Rule change	Possible	Serious	Medium	Yes	Identify through interview with NEMMCO whether the proposed timescales can be met
FOA 12	NEMMCO	Implementation/Credit risk	The Clearing Members calculation of the FOA payment may be incorrect which would result in NEMMCO having insufficient credit coverage	Possible	Serious	Medium	No*	AEMC to consider as part of legal review
FOA 13	NEMMCO EUAA	Operational risk	FOAs are not registered properly and in a timely manner	Possible	Serious	Medium	Yes	Identify the processing time for registration and determine through interview with NEMMCO whether this can be achieved
FOA 14	NEMMCO EUAA	Implementation risk	Call notices are not issued in a timely manner due to tight timeframe	Possible	Serious	Medium	Yes	Identify the processing time for issuing call notices and determine through interview with NEMMCO whether this can be met

Summary of Risks: AEMC Rule Determination - FOAs

	Identifying Stakeholder	Risk Category	Risk Description	Likelihood Rating	Consequence Rating	Rating	Quantifiable	Method to quantify
FOA 15	Proponents	Market risk	The reallocation process is not based on transparent market information relating to pricing and quantity	Almost Certain	Moderate	Medium	No*	NA
FOA 16	Proponents	Market risk	Reallocation are more suited base load generators	Likely	Moderate	Medium	Yes	Estimate percentage of reallocation from base load generators compared to total reallocations
FOA 17	Proponents	Credit risk	Reallocation guarantee may be insufficient	Possible	Moderate	Medium	Yes	Calculate the financial impact for reallocation when a generator stops generating
FOA 18	Proponents	Credit risk	Generators may not have sufficient credit support for reallocation	Possible	Serious	Medium	No*	NA
FOA 19	Proponents	Credit risk	There are a limited number of banks for credit support	Possible	Moderate	Medium	Yes	Quantify the number of banks who provide credit support
FOA 20	Proponents	Market risk	There are a lack of participants to enter into reallocation arrangements	Possible	Serious	Medium	Yes	Calculate an estimate of the number of NEM participants that use the reallocation mechanism
FOA 21	Proponents	Credit risk	Generators may be unable to pay NEMMCO for reallocation transactions when plant failures, transmission outages occur or reallocation agreement is insufficient	Possible	Moderate	Medium	Yes	Select a sample of reallocation events and determine the amount owed by generators
FOA 22	Proponents	Market risk	New entrants do not enter the market due to the high cost (price of finance through bank guarantees and reallocations) in obtaining credit support	Possible	Serious	Medium	Yes	Estimate the cost of credit support of entering the market for a new participant based on predefined data (average amount of electricity purchased in a year compared to average number of sales). In addition, quantify the number of new entrants since market start.
FOA 23	Proponents	Market risk	The reallocation process does not provide pricing signals to the market	Almost Certain	Moderate	Medium	No*	NA
FOA 24	Proponents	Credit risk	Retailers may pay high cost for reallocation	Possible	Moderate	Medium	Yes	Determine the average cost of reallocations
FOA 25	International Power EUAA	Market risk	The price of generation may increase on the basis of varying credit risk	Possible	Serious	Medium	No*	No
FOA 26	NEMMCO	Operational risk	Retailers may exceed their trading limit or MCL on a week-end or an overnight	Possible	Moderate	Low	Yes	Identify the worst case scenarios identified in the market where NEMMCO would not have been adequately covered by FOAs

Summary of Risks: AEMC Rule Determination - FOAs

	Identifying Stakeholder	Risk Category	Risk Description	Likelihood Rating	Consequence Rating	Rating	Quantifiable	Method to quantify
FOA 27	NEMMCO	Implementation/Regulatory risk	Disputes are unable to be resolved in a timely manner due to the process not being adequately defined	Possible	Moderate	Low	No*	AEMC to consider as part of legal review
FOA 28	NEMMCO	Credit risk	NEMMCO may have insufficient funds for prudential coverage	Possible	Moderate	Low	Yes	Identify the worst case scenarios identified in the market where NEMMCO may not have been adequately covered by FOAs and calculate the amount of call notices
FOA 29	NEMMCO	Market risk	Regions with no futures markets may be adversely impacted. Risk of concentration in FOA markets	Possible	Moderate	Low	No*	NA
FOA 30	Proponents	Credit risk	Retailers reveal their trading and underlying financial position to generators when using the reallocation process	Possible	Moderate	Low	No*	NA
FOA 31	National Generators Forum	Market risk	Clearing Members might not have sufficient prudential coverage for entering into the SFE	Unlikely	Moderate	Low	Yes	Perform a high level review of the trading requirements of the SFE
FOA 32	AEMC	Implementation/Regulatory risk	Clearing Members might have obligations preventing them from entering the NEM	Possible	Moderate	Low	No*	AEMC to consider as part of legal review
FOA 33	Energy Users Association of Australia	Market risk	Credit of the overall market might decrease as undercapitalised entities enter the market.	Possible	Moderate	Low	No*	NA
FOA 34	Deloitte	Regulatory risk	The use of FOAs may alter the prudential exposure as the liquidity of futures markets in regions changes over time	Possible	Moderate	Low	Yes	Calculate the level of FOA exposure for non liquid regions
FOA 35	Proponents	Regulatory risk	NEM retailers may seek their own default and suspension from NEMMCO	Unlikely	Moderate	Low	Yes	Calculate how long it would take for retailers to fall below the reallocation amount in case of high prices taking into account NEMMCO credit requirements for retailers
FOA 36	Proponents	Market risk	Pool prices may increase when retailer does not meet reallocations	Rare	Moderate	Low	No*	NA
FOA 37	Proponents	Market risk	Market Participants may pay high fees to cancel reallocations	Unlikely	Moderate	Low	Yes	Determine the cost with proponents to cancel reallocations
FOA 38	Proponents	Regulatory risk	Reallocations may be subject to clawback	Possible	Moderate	Low	No*	AEMC to consider as part of legal review
FOA 39	Proponents	Market risk	Retail costs may increase due to high cost of participation in the market	Possible	Moderate	Low	No*	NA
FOA 40	NEMMCO	Implementation/Market risk	Clearing House may not pay Clearing Members	Unlikely	Serious	Low	No*	AEMC to consider as part of legal review
FOA 41	Proponents	Market risk	Vertical integration may reduce the level of competition in the market in the future	Possible	Moderate	Low	No*	NA

* NB - The ratings for the risks that have not been quantified are indicative ratings based on inferences drawn from the public submissions, observations made throughout the engagement and discussions held with key stakeholders.

Appendix B – Statement of Responsibility

Management's Responsibility

The management of the Australian Energy Market Commission is solely responsible for establishing and maintaining an effective system of internal control over its operations and financial reporting, including, without limitation, systems designed to assure achievement of its control objectives and its compliance with applicable laws and regulations. Deloitte are not responsible for whether, or the manner in which, any recommendations made in this report are implemented. Suggestions for improvement should be assessed by management for their full commercial impact before they are implemented.

Deloitte's Responsibility

Our responsibility is to provide advice and recommendations, based on our experience and knowledge of the subject matter of the project. For the avoidance of doubt, the procedures performed in carrying out this project did not constitute an assurance engagement in accordance with Australian Standards for Assurance Engagements, nor did it represent any form of audit under Australian Standards. We have therefore not expressed any form of assurance opinion on the findings, and none should be inferred from any comments in the above report.

The matters raised in this report are only those which came to our attention during the course of performing our procedures and are not necessarily a comprehensive statement of all the weaknesses that exist or improvements that might be made. We cannot, in practice, examine every activity and procedure, nor can we be a substitute for management's responsibility to maintain adequate controls over all levels of operations and their responsibility to prevent and detect irregularities, including fraud. Accordingly, management should not rely on our report to identify all weaknesses that may exist in the systems and procedures under examination, or potential instances of non-compliance that may exist.

We did not subject the information contained in this report or given to us by the persons and groups interviewed to checking or verification procedures except to the extent expressly stated in section 1.2. This is normal practice when performing Consulting Services, but contrasts significantly with, for example, an audit.

Limitations on use

This report is made solely to the Management of the Australian Energy Market Commission in accordance with our engagement letter dated 15 July 2008, and should not be quoted in whole or in part without our prior written consent. We disclaim any assumption of responsibility for any reliance on this report to any person other than the management of the Australian Energy Market Commission or for any purpose other than that for which it was prepared.

We disclaim all liability to any other party for all costs, loss, damages, and liability that the other party might suffer or incur arising from or relating to or in any way connected with the contents of our report, the provision of our report to the other party, or the reliance on our report by the other party.