

The Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

10 January 2008

To whom it may concern:

Re: NEM Rule Change Proposal – Futures Offset Arrangements for Retailers

This letter is to confirm that in regard to the proposed National Electricity Market rule change relating to the futures offset arrangements for retailers Australian Power and Gas Company Limited is a proponent of the rule change proposal. A copy of the proposed rule change is attached.

Please fee to contact me if you wish to discuss further either via email at jmyatt@auspg.com.au or 02 8908 2710.

Sincerely,



James Myatt
Chief Executive Officer

14 January 2008

The Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Infratil Energy Australia Pty Ltd, which represents Infratil's energy retailing business Victoria Electricity Pty Ltd, is a proponent of the attached Rule change proposal prepared by d-cypha Trade.

Yours faithfully



Darryl S Flukes
Chief Executive



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Momentum Energy is a proponent of the attached Rule change proposal regarding futures offset Arrangements.

Sincerely,

Camillo D'Alessandro
Chief Executive Officer

National Electricity Rule Change Proposal

Futures Offset Arrangements

January 2008

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Disclaimer

Information in this Rule change proposal does not constitute financial product advice or legal advice and is not intended to be a comprehensive analysis of all related issues. Readers should seek their own professional advice in assessing the effect of the information on their circumstances. No liability will be accepted for errors or omissions, including negligence, or for any damage loss or claim arising from reliance on the information. Futures trading involves the potential for both profits and losses and only licensed persons can advise on this risk. You should consider obtaining independent advice before making any financial decisions.

1. The name and address of the persons proposing the Rule change

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Level 2, 6a Glen Street
Milson's Point, NSW 2061

- b) Infratil Energy Australia Pty Ltd
PO Box 1519
Box Hill, VIC 3128

- c) Momentum Energy
Level 8, 50 Market Street
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2. Description of the Proposed Rule

Background to the Proposed Rule

This paper proposes Rule changes to reduce the cost of credit support for market participants in the National Electricity Market (NEM). The proposed Rule changes would also reduce many settlement risks for other market participants and would significantly lower existing barriers to competition. A draft of the proposed Rule changes (including additional explanatory notes) is provided at Appendix 7. The proposed Rule changes will provide NEM retailers and other Market Customers with further alternatives for the management of credit support costs. NEM generators (as creditors) will be less exposed to risk arising from limitations in the current methodology applied by NEMMCO to predict future pool price outcomes upon which to benchmark credit support requirements. This methodology led to a significant under-provisioning of credit support from NEM retailers during Q2 2007. Had the proposed Rule changes been in place prior to Q2 2007, the default and suspension of an independent retailer and financial stress placed on other NEM retailers may have been avoided. The default and suspension incident that triggered the Retailer of Last Resort (RoLR) procedures put other NEM retailers at risk in the regions where the suspended retailer previously held customers.

The risk mitigation benefits arising from the proposed Rule changes will be invaluable in a NEM credit risk environment under increasing stress. High pool price volatility, credit downgrades of major NEM participants, reduced generation capacity due to water shortages, increasing credit default risks in the over the counter (OTC) hedge contract, privatisation of major NEM participants, extreme stress in global credit markets and significantly increased NEM spot market credit support costs have the potential to trigger a major credit incident involving a number of NEM participants which would have the effect of undermining confidence and investment in the sector.

The current physical market settlement arrangements involve NEMMCO collecting payments from retailers for their spot market purchases on a weekly basis, four weeks in arrears. NEMMCO pays these monies to the generators which supplied power to the pool during the relevant period. If a retailer in any region cannot meet its payment obligation, the shortfall in payment (potentially up to 5 weeks worth of accumulated pool price purchases) is borne by all generators in all regions that supplied power during that period. To protect against this payment default risk, the National Electricity Rules (NER) prescribes that retailers must provide credit support in the form of bank guarantees (or guarantees from State Treasury

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Corporations) in an amount which is estimated to be roughly equivalent to the retailer's worst case payment obligation to NEMMCO. The formula used to calculate the level of credit support required from each retailer is referred to as the Maximum Credit Limit (MCL) formula and is calculated prior to the commencement of each calendar quarter to be applied for the duration of that quarter. The key parameters of the MCL for each retailer in a region are:

MCL = The average regional pool price for the last year \times a volatility factor based on pool price volatility during the last year \times the retailer's likely average daily demand consumption during the quarter \times 42 days of potential energy consumption.

The limitations of this methodology were illustrated during Q2 2007 when MCL-calculated credit support (calculated prior to quarter commencement) was inadequate by approximately \$1.9 billion, because Q2 2007 pool prices were higher than during the last 12 months. When a retailer's MCL guarantee levels are breached due to higher than estimated pool prices, all NEM generators are at risk of payment default by the under-secured retailer. NEMMCO must react by making margin calls on the under-secured retailer. Unlike futures contract variation margin calls, which are payable the next morning by an SFE Clearing Participant regardless of whether it's client made payment, spot market margin calls on retailers triggered by a breach of NEMMCO bank guarantee support, are not guaranteed by credit support providers. Even if NEMMCO acts quickly to suspend a defaulting retailer from the NEM, potential default-related losses to all generators could be substantial during high pool prices as evidenced by physical market payment obligations increasing by approximately \$190 million in a single day in the NSW region alone and exceeding the MCL worst case price estimate on that day by 1,496%¹.

The ex-ante reallocation procedures currently supported by the NEL which were designed to address the duplication of credit support between the financial and spot market have failed to address the risks and inefficiencies associated with the physical settlement arrangements in any meaningful way. Ex-ante reallocation arrangements have the potential to create additional default risks to all NEM generators, when energy supply constraints affecting a reallocated generator coincide with (or cause) a high pool price event. Ex-ante reallocations also have the effect of providing additional market power to regional base load generators and to vertically integrated generators and retailers, creating barriers to entry for independent and new entrant NEM Participants. Regional base load generators maintain market power by being the only practical suppliers of energy-committed reallocation derivatives for retailers in a NEM region, while retailers with vertically integrated base load generation maintain a competitive advantage through being able to sell reallocation derivatives exclusively to their related entity and internalise the resultant credit default risk. Additional analysis of the risks, inefficiencies and barriers to entry created by reallocation arrangements are discussed in Appendix 6 (section 2).

Description of the Proposed Rule

The proposed Rule changes define and accommodate Futures Offset Arrangements (FOAs) and improve the MCL calculation methodology. Rather than the MCL methodology using an inflexible backward looking price observation as a basis for predicting future pool prices, the MCL methodology would utilise SFE electricity futures prices as the key inputs of the model, representing a forward looking market-consensus view of future pool price outcomes. FOAs are commitments entered into by a SFE Clearing Participant on behalf of a retailer to redirect positive cash flows associated with the retailer's futures position to NEMMCO (to be held in a Security Deposit Arrangement) to protect against the default of the retailer to NEMMCO. In return, the retailer only provides bank guarantee support to NEMMCO up to a level (in \$/MWh) equivalent to the futures price at which the FOA was initiated and beyond which cash payment obligations from the Clearer to NEMMCO arise under the FOA. Futures related cash flows are not limited to the MCL price prediction assumption and as such, would have reduced the extreme risk

¹ 13th June 2007.

faced by all generators and many retailers during Q2 2007, created by the limitations of the current spot market settlement arrangements and MCL guarantee methodology.

FOAs will enable NEM Participants to avoid incurring unnecessary credit support costs for both their spot market purchases and their (offsetting) financial market hedges. FOAs would have reduced retailers' costs associated with duplicated credit support requirements and costs by approximately 42% on average, from Q2 2005 to Q2 2007 (across NSW, QLD, VIC and SA).

FOAs will be voluntary arrangements and will involve:

1. A NEM Participant and a SFE Clearing Participant submitting a Notice of Futures Offset Arrangement to NEMMCO;
2. Upon registration of the FOA by NEMMCO, the SFE Clearing Participant paying to NEMMCO cash amounts equivalent to positive futures variation margins attributable to nominated electricity futures contracts held by the SFE Clearing Participant on behalf of the NEM Participant;
3. NEMMCO applies amounts received under the FOA to the NEM Participant's Security Deposit Arrangement (or as otherwise agreed between NEMMCO and the NEM Participant). NEMMCO would release the proceeds from the FOA from the Security Deposit Arrangement:
 - a. At the end of the relevant MCL quarter; or
 - b. If the FOA is terminated prior to the end of the relevant MCL quarter, upon the NEM Participant meeting a recalculated MCL that results from the termination of the FOA.
4. NEMMCO reducing the spot market credit support required from the Market Participant via a reduced Maximum Credit Limit (MCL) in consideration of the FOA.
5. The extent of the MCL reduction being commensurate to the proportional difference between:
 - a. NEMMCO's volatility-adjusted MCL price expectation (in \$/MWh) upon which spot market credit support requirements are calculated; and
 - b. The price of the electricity futures contracts (in \$/MWh) as stipulated in the Notice of Futures Offset Arrangement, above which positive futures variation margins are to be paid by the SFE Clearing Participant to NEMMCO.
6. The NEM Participant continues to make spot market settlement payments to NEMMCO as per existing settlement arrangements, while benefiting from a reduced MCL and a reduced likelihood of being required to make spot market margin call payments to NEMMCO.

The other key Rule change effecting the MCL methodology prescribed in schedule 3.3 (see Appendix 7) would involve replacing the backward looking concept of estimating future pool prices by observing historical pool prices "over a period of time" with an improved forward looking price discovery process using the relevant SFE futures contract price.

3. Statement issues concerning the existing Rules that are to be addressed by the proposed Rules supporting Futures Offset Arrangements

FOAs would improve economic efficiency in the NEM by maximising productive efficiency via cost reductions (i.e. by reducing risk-associated costs) and improving dynamic efficiency (i.e. by increasing competition). These efficiency improvements will be discussed in relation to inefficiencies created by the existing Rules, including existing Rules relevant to MCL methodology and ex-ante and ex-post reallocation transactions (which currently exclude offset arrangements involving futures):

3.1 Maximising Productive Efficiency (reducing risk-related costs)

1. The existing reallocation Rules create significant counterparty credit risk (and hence costs) for generators and retailers because the risk of retailer default is merely transferred from NEMMCO to reallocating generators. Generators either refuse to accept this additional risk (as evidenced by low uptake of NEMMCO reallocation derivatives by market participants) or pass the cost associated with this credit default risk on to reallocating retailers via high reallocation transaction costs. See appendix 6 (section 2.2).
2. The existing Rules allow generators with poor credit ratings to sell ex-ante reallocation derivatives via NEMMCO without providing NEMMCO with any prudential support other than potential future generation receipts (and a newly introduced prudential margin which is likely to be inadequate during sustained periods of high pool prices²). This can create substantial risks to all NEMMCO creditors (particularly other generators) in the event of an unforeseen outage of a reallocated generator or an intraregional constraint. These arrangements also create perverse incentives for some generators to enter into reckless reallocation arrangements when their plant reliability is known to be potentially inadequate. Other generators can be forced to bear a proportion of the losses that result when an unreliable reallocated generator fails or deliberately triggers their own default to NEMMCO (leaving the reallocated retailer without adequate credit support) to avoid an uneconomical forward reallocation commitment (which could potentially create several hundred million dollars of windfall profit to the defaulting generator). See appendix 6 (section 2.7, 2.13 and 2.15);
3. The limited pool of bank guarantee providers which underwrite credit support to NEMMCO on behalf of NEM retailers creates unnecessary concentration risk. This concentration risk will become exacerbated as Government owned retailers privatise and government guarantees to NEMMCO must be replaced with increased reliance on non-government credit support providers. The banks, which already have significant credit risk exposures to energy businesses may increase their risk premiums to accommodate the increased exposure to this sector. See appendix 6 (section 2.5);
4. Under current arrangements, prudential support in the form of bank guarantees provided to NEMMCO by retailers in accordance with the MCL formula provides only limited prudential support. These bank guarantee arrangements have proven to be inadequate to protect NEMMCO creditors (generators) during periods of higher than expected pool prices³. Additionally, the backward looking nature of the MCL methodology has prompted NEMMCO to abandon normal MCL price prediction methodology by allowing NEM retailers to post less than the calculated MCL bank guarantee requirement (potentially increasing risks to all generators) e.g. NEMMCO's decision to reduce MCL guarantee support from NSW retailers to substantially less than the Q3 2007 MCL calculated requirement, (presumably) due to an opinion that high pool prices in NSW would not continue. See appendix 6 (sections 2.6, 2.8 and 2.9);

² NEMMCO's prudential margin for NSW during Q2 2007 (using NEMMCO's worst case MCL price assumption of \$54.09/MWh) would have provided less than 1.5 hours of pool price protection at \$10,000/MWh

³ E.g. Q2 2007 where NEMMCO's MCL methodology predicted a worst case \$54.09/MWh pool price average (approx) for NSW and the actual Q2 2007 pool price average was \$123.75/MWh (June 2007 NSW pool prices averaged \$230.66/MWh). During June, MCL-calculated bank guarantee support proved to be insufficient by approximately \$1.9 billion across the NEM.

E.g. Q1 2006 where NEMMCO's MCL methodology predicted a worst case 33.57/MWh pool price average (approx) for Victoria and the actual Q1 2006 pool price average was \$43.88, resulting in guarantee support being inadequate, creating credit support shortfalls.

5. FOAs will avoid a NEM retailer deliberately exercising a free option to trigger its own “default and suspension” as a Market Customer in order to transfer its loss making pool supply commitments onto other retailers during high pool price outcomes, while continuing to benefit from its profitable financial hedges such as futures. If FOAs are in place, the windfall profits earned from the retailer’s futures positions are received by NEMMCO and quarantined in a Security Deposit Arrangement. This quarantining of futures market profits limits the incentive and the ability for NEM retailers to dump their loss making pool supply commitments onto other retailers (via the RoLR arrangements). Under current arrangements, the deliberate or non-deliberate default and suspension of a NEM retailer to NEMMCO could create significant financial costs to other retailers and create a situation where an incoming retailer has insufficient credit support to support the inherited customer positions (potentially placing NEM generators at risk). See appendix 6 (section 2.14);
6. Under FOAs, costs associated with regulatory risk will be minimised because NEM Participants will have access to prudential offset arrangements which utilise financial market products (i.e. futures) which are fully compliant with the Corporations Law and operated by a licensed financial market operator (SFE) and a licensed clearing and settlements facility (SFECC);⁴

3.2 Maximising Dynamic Efficiency (promoting competition)

7. Independent new entrant retailers are disadvantaged by being subject to more expensive transaction costs relative to their size and/or exclusion from access to reallocation hedges with non-related generators. See appendix 6 (section 3.2). The imprecision of the current MCL methodology (and the credit support demanded by NEMMCO as a result) creates a barrier to entry for new entrant retailers. Unnecessary and imprecise MCL guarantee requirements also limit the growth potential of existing small retailers and their ability to provide competition benefits to customers, as the retailer’s potential scale of operation is limited by its access to credit support. The reduction in duplication of MCL and financial market credit support delivered by FOAs would therefore promote competition in the supply of electricity to consumers. Additionally, the inaccuracy of the current backward looking MCL methodology often results in new entrant retailers having to raise substantial cash amounts at short notice to meet spot market margin calls when NEMMCO MCL guarantees are inadequate to cover high pool price purchases. The costs and availability of this emergency funding creates a barrier to entry for new entrant retailers which could be mitigated under FOA arrangements, where futures contract value increases in response to pool price increases, automatically creating positive cash flow for retailers and enabling them to avoid or minimise NEMMCO spot market call notices;
8. Interstate ex-ante reallocation trading is prohibited under current ex-ante reallocations, regionalising the supply of reallocations and reducing competitive choices for retailers seeking reallocations.⁵ This has the effect of regionalising the so called ‘national’ market into regions. See appendix 6 (section 2.12);
9. Non-bank specialist derivative traders (other than NEM participants) contribute substantially to futures market liquidity (regularly more than many of the largest NEM Participants) but are

⁴ See the ASX submission to the NEMMCO Reallocation Rule change Request 2006, regarding regulatory and compliance comparisons between electricity futures derivatives and NEMMCO reallocation derivatives (see ASX submission at http://www.d-cyphatrade.com.au/newsroom/industry_news_2/foas).

⁵ Interstate trading is prohibited from ex-ante energy reallocations, limiting any reallocation market to participants in a single state region.

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prohibited from participating in the reallocation hedge market, severely limiting competition in the supply of spot market offset arrangements.⁶ See Appendix 6 (section 2.11);

10. The lack of popularity (and hence supply) of reallocation arrangements under the current Rules has limited the extent of cost reduction efficiency gains available to new entrant NEM participants;
11. Vertical integration (VI) of retailers and generators is encouraged by the current Rules because vertically integrated retailers are unfairly advantaged by being able to avoid reallocation credit risk costs through reallocation between related entities in the same NEM region. This provides incumbent vertically integrated retailers with a competitive cost advantage over new entrant retailers who are not large enough to purchase generation and sell NEMMCO reallocation swap offsets to themselves. Vertically integrated retailers (those which control generation) can withhold supply of other hedge derivatives to independent new entrant retailers, forcing the new entrants to absorb more expensive hedges from a diminished pool of independent generators or to not hedge and face significant financial risks and costs associated with pool price exposure. In this way, VI is supported by reallocations and creates significant barriers to entry. Another anti-competitive outcome of VI is the muting of investment signalling from transparent financial markets. See appendix 6 (section 3.1 and 3.2);
12. Reallocation arrangements are completely non-transparent (i.e. traded prices and volumes are not published), threaten to crowd out transparent financial electricity markets and mute investment signals for new generation and transmission. See appendix 6 (section 2.10);
13. Reallocation arrangements discriminate against peaking generation because reallocating generators are obliged to generate with absolute certainty in the future in order to meet their reallocation commitment. This results in peaking generation technology being (practically) excluded from competing in the supply of ex-ante reallocation derivatives because peaking generators cannot commercially pre-emptively commit to producing energy for specified time intervals in the future. Peaking generators will not commit to reallocation arrangements because the future pool price during the future term of the reallocation could be less than the short run margin cost of peaking generation. Base load generators are more likely to be prepared to commit to produce energy at lower pool prices in the future and hence base load generation technology is preferentially treated over peaking generation technology. See appendix 6 (section 3.3);
14. Parties to reallocation transactions are forced to reveal the identities of their hedge counterparties to NEMMCO and to the other reallocation swap contract counterparty. This potentially increases costs to retailers because generators who are approached by retailers will have confidential information about the retailer's hedge position (or lack of it). This information leak increases the likelihood of the generator front-running the retailer (i.e. bidding up prices of related financial hedge products, ahead of the retailer's hedge transaction) or inflating reallocation hedge prices knowing that the retailer must not already have a reallocation hedge and will continue incurring expensive MCL costs unless it buys a reallocation derivative from a generator. In comparison, FOAs would enable a retailer to purchase a futures contract anonymously to achieve a MCL credit support cost saving, without incurring the risks and costs of telegraphing its intention to generators prior to obtaining the offset. See appendix 6 (section 13); and
15. A NEM retailer requires permission from a same-region generator in order to enter into a reallocation transaction. Either party to a reallocation transaction requires the permission of the

⁶ Non-bank financial trading entities such as hedge funds and other financial liquidity providers are excluded from supplying reallocation hedges unless they own physical generation assets or are a retailer or other Market Customer.

original reallocation counterparty in order to unwind a reallocation transaction. This further limits the flexibility and supply of reallocation offsets and increases transaction costs because base load generators maintain financial market power and can charge retailers exorbitantly (priced into the reallocation derivative price) to unwind a reallocation position. See appendix 6 (section 2.18 and 3.1).

4. Explanation of how the proposed Rules supporting Futures Offset Arrangements would address the issues concerning the existing Rules

Rule changes supporting FOAs would address the issues concerning the existing Rules in the following ways⁷:

1. Addressing issues 3.1.1, 3.1.2, 3.1.3, 3.1.6, 3.1.7 and 3.2.10.

Historically, Rule supported FOAs would have reduced MCL related credit support requirements and associated transaction costs to retailers by up to 68% (see Appendix 1 for MCL credit support reductions that could have been achieved if FOAs had been supported by the Rules since Q2 2005). Through FOAs, payment risks (and related costs) are reduced and substantially borne by SFE Clearing Participants rather than being transferred (via ex-ante reallocation) to individual generators, or potentially to other generators not involved in the reallocation. FOAs would therefore deliver improved netting of physical and financial market risk exposures and associated cost reductions for NEM participants. **The substantial credit support efficiency advantage inherent in futures markets arises from the daily margining process facilitated by the futures clearing house** – SFE Clearing Corporation (SFECC), which requires credit support from SFE Clearing Participants to cover a worst case⁸ one day price movement. SFECC achieves this credit support efficiency through daily mark to market revaluation of the futures contract, contract netting and strictly regulated prudential arrangements⁹. NEMMCO ex-ante reallocations require much greater credit support (e.g. bank guarantees) to cover much larger potential price movements over much longer terms because daily mark to market cash margining is not utilised by NEMMCO. Further transaction cost reductions are delivered by futures because they are facilitated on behalf of NEM participants by a diverse pool of competing SFE Clearing Participants. See appendix 6 (section 2.1, 2.2, 2.3, 2.4);

2. Addressing issues 3.2.8 and 3.2.9.

Electricity futures contracts (in all listed state regions) are actively traded by both domestic and international trading entities including bank and non-bank specialist financial traders, local and interstate generators, retailers and privately funded individuals. Any spot quarter electricity futures contract held by a SFE Clearing Participant for a NEM retailer can be applied to a FOA, regardless of whether the original seller was a bank, a local generator, an offshore hedge fund or any other futures trader. This compares favourably to relocation arrangements which exclude non-bank

⁷ n.b. more than one explanation may be provided to explain how the proposed Rule would address each issue concerning the existing Rules. Each explanation in this section 4 references the relevant issue(s) itemised in section 3.1 and 3.2 of this proposal that would be addressed.

⁸ To within a 99% confidence level.

⁹ The SFECC is a licensed Clearing and Settlement Facility under Corporations Law, and is supervised by the Reserve Bank of Australia, ASIC and the ACCC. Additional prudential safeguards are applied to SFE SFE Clearing Participants (see www.asx.com.au for more details of the SFECC risk management framework).

financial traders and inter-state NEM Participants from trading in NEMMCO reallocation derivatives;

3. Addressing issue 3.2.11.

The electricity futures market provides open and transparent trading access to all futures market participants regardless of size or geographic location, without providing preferential treatment of vertically integrated NEM participants over independent NEM participants or other futures traders. See Appendix 6 (section 3.2);

4. Addressing issue 3.2.10.

The electricity futures market is larger than the underlying NEM spot market (NSW, VIC, SA and QLD)¹⁰. Existing futures contracts could be applied immediately (at negligible cost) to FOAs to immediately deliver credit support offset benefits to NEM retailers. The SFE's Exchange for Physical mechanism will enable a large proportion of total physical energy (and associated spot market credit support requirements) to be offset through FOAs, in addition to the existing futures hedge positions of NEM participants;

5. Addressing issue 3.2.12.

The SFE futures market is transparent. FOAs will stimulate additional futures trading, resulting in improved price and volume information transparency (electricity futures bids, offers and trades) being broadcast in real time via existing data vendors and by the free intra-day web based market data service provided by d-cyphaTrade¹¹. This information is publicly available to all market participants and interested observers including electricity consumers and potential new investors in generation and transmission assets;

6. Addressing issue 3.1.2.

The prudential support provided by FOAs is not compromised by unforeseen generation outages, regardless of whether a generator was the original seller of the futures contract. The buyer of the futures contract is indifferent as to the credit strength or reliability of the original seller. Ironically, generation outages (and the resulting pool price spikes) may increase the value of bought futures contracts, creating positive cash flows for NEMMCO under the FOA, rather than triggering a spot market credit support shortfall when a reallocated generator fails. FOAs are supported by a residual component of the MCL being retained as bank guarantees, a degree of prudential security which is not provided by the existing Rules which support ex-ante reallocation (other than the newly introduced prudential margin which quickly depletes during periods of high pool prices coinciding with an outage of a reallocated generator). See appendix 6 (section 2.2, 2.7);

7. Addressing issues 3.1.4 and 3.1.5.

Prudential coverage provided by FOAs is not limited to MCL price predictions as in the case of bank guarantee support under normal settlement arrangements (i.e. without reallocation).¹² Futures prices move in accordance with real time market-consensus expectations of future pool price outcomes and create positive cash flows for buyers of futures contracts (via daily variation margins) when futures prices increase. The final cash settlement value of a futures contract is equal to the pool price average of the relevant quarter. See appendix 6 (section 2.9). Daily

¹⁰ During 2007, the dcypha SFE Electricity Futures market traded 291 million MWh, equivalent to 149% of underlying NEM physical demand.

¹¹ www.d-cyphatrade.com.au. Other data providers include Reuters, Bloomberg, Futures Source etc.

¹² See appendix 2 for further details of how FOAs could have avoided substantial MCL bank guarantee credit support shortfalls to NEMMCO during Q2 2007.

margining of FOA arrangements by SFE Clearing Participants ensures that in the event of an early termination of an FOA prior to the end of a quarter, credit support to NEMMCO incorporating FOA cash receipts (held as a NEMMCO security deposit) plus residual MCL guarantees is equal to the best available market consensus view of future pool price outcomes (i.e. using prevailing futures market prices). See appendix 6 (section 2.16);

8. Addressing issue 3.2.13.

Peaking generation can more readily sell futures contracts and thereby contribute to the supply (and cost competitiveness) of offset arrangements (FOAs) for retailers, because futures contracts do not create a commitment for peaking generators to dispatch energy (at potentially uneconomical pool prices). A peaking generator which has sold a futures hedge need only decide to generate (at its discretion) during future time periods in which pool prices exceed the generator's short run marginal cost. See appendix 6 (section 3.3);

9. Addressing issue 3.2.14.

The parties to a futures contract remain anonymous. The identities of futures sellers are not revealed to NEMMCO and are never revealed to other market participants (without the consent of the retailer), thereby reducing costs and risks associated with a retailer telegraphing its hedge market intentions to a generator; and

10. Addressing issues 3.2.10, 3.2.14 and 3.2.15.

FOAs provide improved credit support management flexibility to retailers with lower transaction costs because the retailer does not require another NEM participant's permission (i.e. a generator) to initiate or unwind a FOA.

5. Explanation of how the proposed Rules supporting Futures Offset Arrangements would or would be likely to contribute to the achievement of the National Electricity Objective

The National Electricity Objective (NEO), as stated in the National Electricity Law (section 7) is:

“To promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity with respect to:

- (a) price, quality, safety, reliability, and security of supply of electricity;
- (b) the reliability, safety and security of the national electricity system.”

The Rules supporting FOAs would contribute to the achievement of the NEO in the following ways:

Relevant component of the NEO	How proposed Rules supporting FOAs would contribute to achievement of the NEO
Promote investment in electricity services	<ul style="list-style-type: none">▪ FOAs would be supported by, and would support transparent futures trading which provides more efficient signals for new investment in generation and transmission.▪ Investment in gas fired peaking generation is not unfairly discriminated against via FOAs. In the absence of Rule supported FOAs, retailers would be less likely to seek futures hedges with peaking generators due to discriminatory exclusion of futures contracts from NEMMCO credit support offset benefits.▪ FOAs would not encourage or reward vertical integration. Vertical integration reduces hedge market transparency and liquidity and mutes investment signals.
Price of supply of electricity	<ul style="list-style-type: none">▪ FOAs would deliver immediate and substantial cost reductions to retailers and other Market Customers by reducing the duplication of spot market and financial market credit support.¹³▪ Costs of credit support offset arrangements would be lower under FOAs due to:<ol style="list-style-type: none">i. Increased competition from a larger and more diverse pool of offset providers (including futures sellers such as bank and non-bank financial traders and energy companies); andii. Providing an international pool of offset providers (futures sellers), competing to supply offsets to retailers in any listed state region at transparent and competitive prices.¹⁴iii. Reducing costs to retailers and other Market Customers arising due to the requirement under the existing Rules to attain a generators direct permission (e.g. being forced to pay a reallocation trading margin) to enter into or reverse out of a reallocation derivative and to compensate the generator for exposing itself to the credit default risk of the retailer.

¹³ See Appendix 1: Efficiency improvement – reduced credit support costs using Futures Offsets

¹⁴ Australian electricity futures contracts are heavily traded by speculators from at least 3 countries outside of Australia.

- Cheaper operating costs will reduce the barriers to entry for new retailers which can then more readily compete with incumbent retailers (on price), yielding a cheaper supply of electricity for consumers.
- FOAs would provide Market Customers including electricity consumers with greater ability to self-hedge (at potentially more competitive hedge contract prices) with reduced spot market credit support costs, as an alternative to energy supply arrangements with incumbent retailers.
- Price outcomes that may be less competitive due to the effect of vertical integration are avoided through FOAs. For example, FOAs would minimise the extent to which a small number of large vertically integrated retailers from using their market power (control of the generators) within a specific region to shut down the supply of hedge contracts to new entrant, independent retailers. New entrant retailers cannot be expected to purchase a power station in order to commence retailing in a region, hence financial hedge markets are critical to reducing barriers to entry and promoting increased competition to consumers.

Incumbent vertically integrated retailers may also have an incentive to use generation market power to artificially inflate pool prices particularly where their combined portfolio is *long* (i.e. net physical exposure plus financial hedges). This strategy has the effect of increasing the price of available hedge contract cover in the region and can cause commercial damage to independent new entrant retailers, thereby creating a barrier to competition in the region of the vertically integrated retailer.

FOAs allow new entrants to provide competition to incumbent retailers (and generators) with reduced costs and on a level playing field without being crowded out as vertically integrated retailers and generators reduce the supply and increase the cost of hedge contract cover.

Quality of supply of electricity.

Security of the national electricity system.

- FOAs would reduce costs and barriers to entry for new entrant retailers which would support improved product choice (and quality) for consumers.
- The actual and perceived integrity of the NEM prudential arrangements and ability for NEMMCO to meet its obligations to creditors is critical in order to attract new generation and transmission investment. A credit default event exacerbated by inadequate spot market prudential arrangements (in the absence of FOAs) could undermine long term investment and hence security of the national electricity system. FOAs would:
 - i. introduce a larger and more diverse pool of credit support providers (including international investment banks which are not currently providing NEMMCO guarantee support on behalf of NEM retailers);
 - ii. reduce same-sector concentration risk, as compared to that which contributed to the California ISO defaulting on payments to market participants, and the failure of the California Power Exchange in 2001. Electricity futures represent a small percentage of cleared positions at the SFECC;
 - iv. introduce the prudential security of a daily margining framework facilitated by a Central Counterparty Clearer

- (attracting a zero credit risk weighting under Basel II), and the prudential support of SFE Clearing Participants. The prudential integrity of the SFECC is supported by regulatory supervision by the Reserve Bank of Australia and ASIC;
- v. automatically deliver ex-post reallocation benefits to NEM participants, thereby reducing the size (and default risk) of outstanding forward settlement exposures between participants;
 - vi. may regularly assist NEM retailers to automatically avoid emergency spot market collateral calls by NEMMCO when NEMMCO's MCL pool price prediction proves inadequate (e.g. Q2 2007). At such times the risks and costs to other NEM Participants arising from the default of a NEM retailer can be reduced. e.g. by permitting FOA cash payments to NEMMCO to help reduce the likelihood of default and suspension of retailers and thereby reducing the risk of short payment to generators and avoiding RoLR risks to non-defaulting retailers;
 - vii. are not limited (in their price protection benefits) to NEMMCO's MCL price prediction or reliance on a limited level of bank guarantees under normal NEMMCO settlement arrangements;
 - viii. preserve a residual component of bank guarantees which provide additional protection in comparison to current ex-ante reallocations;
 - ix. do not expose NEMMCO to a credit support shortfall solely as a result of a reallocated generator suffering an unforeseen generation outage. The performance of futures contracts under a FOA is not compromised (and may create additional cash flow benefit to NEMMCO) if a generator has an unexpected generation outage.
- The physical security of the national electricity system would be supported by FOAs because the electricity futures trades underpinning FOAs would deliver financial market price transparency, critical to triggering new investment in generation and transmission infrastructure.

6. Explanation of the expected benefits and costs of the proposed Rule change

The following explanation of the expected benefits and costs of the proposed Rule change supporting FOAs includes:

1. the expected benefits and costs of the proposed Rule change; and
2. the potential impacts of the proposed Rule change on those likely to be affected.

6.1 The expected benefits and costs of the proposed Rule change

Expected benefits of the proposed Rule change

The expected benefits of the proposed Rule change (as discussed in earlier sections of this Rule change Proposal) are substantial and far reaching. These benefits include (i) substantially improved financial market transparency which is essential to effective investment signalling for new generation and transmission, (ii) benefits from reduced barriers to entry for gas fired peaking generation which can much more effectively compete in the supply of credit support benefits for retailers and Market Customers (via futures trading) if the proposed Rule change is approved, and (iii) improved competition benefits to independent and new entrant generators and retailers who are otherwise unfairly disadvantaged by the existing Rules by having to absorb additional credit default risks (and/or costs) under reallocation arrangements and potentially risk losing access to financial market liquidity due to the exiting Rules preferentially favouring retailers which are vertically integrated with related base load generators. The risk of a large vertically integrated NEM retailer deliberately using it's control of a related generator to eradicate supplies of hedge contracts from being available to competing (or potentially competing) retailers, and forcing independent competitors to absorb substantial pool price risk and high spot market credit support costs is thereby reduced by FOAs.

Additional expected benefits of the proposed Rule change include cost reductions related to FOAs providing retailers with an additional and more competitive (and accessible) supply of spot market credit support offset arrangements than the current reallocation arrangements which threaten to regionalise the supply of credit offset arrangements. FOAs will be indirectly and seamlessly provided to retailers by not only "same region base load generators", but by any seller of futures contracts, immediately creating an international pool of offset providers for NEM Participants encompassing financial speculators such as hedge funds, banks and other professional traders. An additional expected cost reduction benefit for retailers and other Market Customers is also created under the proposed rule by the retailer or Market Customer not requiring the derivative seller's permission to apply a futures contract to a FOA.

The proposed Rule change would also level the playing field by providing immediate cost reductions created by the reduction in duplicated credit support costs to new entrant retailers and allowing other electricity consumers (customers) a more practical opportunity to self-hedge (by reducing spot market credit support costs) and improving competition in the supply of electricity to consumers.

Rule change Request - Futures Offset Arrangements

Additional expected benefits of the proposed Rule change include risk mitigation benefits stemming from the trading and credit support infrastructure and processes facilitated by an established (and licensed) electricity futures market and Clearing and Settlement Facility (i.e. the SFE and SFECC). The electricity futures market trades in greater volumes than electricity consumed in the underlying NEM spot market (NSW, VIC, SA and QLD), and is supported by credit risk management experts (SFE Clearing Participants) who already facilitate significant credit risk management support for NEM Participants. The cost and risk reduction benefits of the process of daily margining and contract novation provided by the SFECC is internationally accepted but is not utilised under the current Rules. These proven processes and established infrastructure are likely to provide benefits which would have been welcomed during Q2 2007 where the weaknesses of the existing Rules (which rely on inflexible bank guarantees) proved to be inadequate. Such benefits are likely to include (i) the ability for NEM retailers and self-hedging electricity consumers to regularly avoid or minimise the frequency and/or size (and cost) of spot market margin calls, (ii) reduction of same sector credit default concentration risk (iii) automatic delivery of ex-post offset benefits (via daily margining of futures positions) (iv) access to an alternative arrangement for reallocating participants which minimises the risk that NEMMCO deregisters a reallocation and thereby creates substantial hedge contract replacement costs for individual participants, (v) an alternative to NEMMCO relying on inflexible bank guarantee support which has proven to be inadequate during higher than expected pool price outcomes, (vi) reduction of the risk (and associated cost) of short payment to “innocent” NEM generators caused by the unforeseen outage of a reallocated generator triggering the deregistration of a reallocation which results in a credit support shortfall from the reallocated retailer.

Additional related benefits are expected to be created by the proposed Rule change by allowing FOAs as an alternative credit offset mechanism which avoids several perverse commercial incentives created under the existing Rules. Such benefits include a reduction in the commercial incentive for NEM retailers and generators to deliberately trigger their own suspension and default by NEMMCO in order to gain commercial advantage while commercially disadvantaging other NEM Participants. Where a retailer has a FOA in place, all monies previously collected by NEMMCO from SFE Clearing Participants (from upward revaluations in the market price of the entire futures quarter) are held by NEMMCO. This has the benefit of reducing the commercial incentive for a NEM retailer to deliberately trigger its own suspension by NEMMCO, resulting in RoLR proceedings (creating costs and risks to other NEM retailers) in order to profit from positive mark to market revaluation of its financial hedge products while forcing other retailers to inherit its loss making customer supply contracts during periods of high pool prices. Additionally, under the existing Rules, reallocated generators have a free option to deliberately trigger a “default event” which could be commercially viable for the generator if the NEMMCO reallocation swap contract it sold is deeply out of the money (on a forward basis). A possible effect of such a reallocation deregistration is that the previously reallocated retailer could immediately fall in breach of its credit support obligations, placing other generators at risk of non-payment, while the generator in default achieves a windfall profit by avoiding substantial forward reallocation derivative trading losses.

Additional expected benefits of the proposed Rule change arise from an improvement in the MCL methodology to utilise futures prices as the best available (forward looking) market consensus price indicator of the expected average pool price during a quarter, rather than the primitive, backward looking methodology prescribed by the current Rules which attempts to forecast future pool price averages using only historical observations. These benefits include a reduction in the likelihood and magnitude of credit support shortfalls when upcoming pool prices exceed historical averages and a reduction in the likelihood and magnitude of overly onerous credit support costs to retailers when upcoming pool prices are substantially less than historical averages.

Expected costs of the proposed Rule change

The expected costs of the proposed Rule change are negligible because the electricity futures market and clearing facility is already established (at no cost to NEM Participants) and Market Customers such as retailers have already established futures positions which could be seamlessly and immediately applied to FOAs. FOAs would be voluntary arrangements and there are no additional transaction costs to sellers of futures contracts (e.g. generators, hedge funds and banks) which arise if a retailer chooses to apply a futures contract to a FOA.

If retailers and other Market Customers seeking credit support offsets via FOAs wish to establish *additional* futures positions for the sole purpose of FOAs, the standard per-contract futures execution and clearing costs apply.

6.2 The potential impacts of the proposed Rule change on those likely to be affected

Potential impacts of the proposed Rule change on those likely to be affected include, for retailers and Market Customers, (i) lower operating costs, (ii) increased flexibility and availability of credit support alternatives, and (iii) reduced barriers to entry.

Potential impacts of the proposed Rule change for electricity consumers include relatively cheaper and more competitive sources of electricity supply from an increased number of retail suppliers.

Potential impacts of the proposed Rule change for peaking generators is significant due to reductions in barriers to entry in the supply of offset arrangements, which increases the demand and liquidity for futures hedges sold by peaking generators.

The risk management-related impacts of the proposed rule on NEM Participants, including improvements to MCL calculation methodology and the introduction of daily margining via futures to help avoid the limitations of the existing Rules (which were illustrated by spot market price outcomes, not for the first time during Q2 2007) are discussed in previous sections. Retailers and generators will also be affected to the extent that the proposed Rules are utilised by participants due to the reduction in the incentive for generators and retailers to benefit from inefficiencies in the current Rules to achieve commercial advantage to the detriment of other NEM Participants via self-triggered NER default events.

Appendix 1: Efficiency improvement – reduced credit support costs using Futures Offsets

Historical efficiency improvements (i.e. proportional cost reductions) in the MCL-based bank guarantee burden¹⁵ are shown as a percentage reduction in MCL credit support requirements, on a regional basis. The efficiency improvement is based on NEMMCO's volatility-adjusted MCL price estimate (in \$/MWh) minus the futures price (in \$/MWh) at which a FOA could have been established one day prior to the start of each calendar quarter. Initial margin deposits on futures contracts have been incorporated in the workings.

Table 1. MCL credit support efficiency improvement using futures - up to 68% (NSW and SA Q2 2006).

Futures Offset efficiency improvement (MCL reduction) assuming Futures Offsets were applied at the official settlement price 1 day prior to the start of each MCL Quarter (includes initial margin funding) = $[(VF \times P) - (\text{Futures Price} + \text{Initial Margin})] / (VF \times P)$									
Region	Qtr 2 2005	Qtr 3 2005	Qtr 4 2005	Qtr 1 2006	Qtr 2 2006	Qtr 3 2006	Qtr 4 2006	Qtr 1 2007	Qtr 2 2007
SA	49%	45%	41%	10%	68%	62%	54%	34%	41%
QLD	52%	43%	28%	0%	58%	50%	39%	14%	29%
VIC	32%	28%	30%	0%	56%	57%	52%	32%	40%
NSW	66%	65%	64%	55%	68%	57%	52%	25%	0%

Workings (all figures in \$/MWh)									
NEMMCO MCL bank guarantee requirement prior to Futures Offset i.e. Volatility Adjusted MCL Price Estimate = $(VF \times P)$									
Region	Qtr 2 2005	Qtr 3 2005	Qtr 4 2005	Qtr 1 2006	Qtr 2 2006	Qtr 3 2006	Qtr 4 2006	Qtr 1 2007	Qtr 2 2007
SA	66.47	65.39	65.20	63.38	103.19	93.65	93.86	89.17	83.35
QLD	60.00	50.64	51.48	42.66	69.05	59.85	60.60	55.42	79.94
VIC	42.01	42.00	42.05	33.58	66.57	77.52	80.80	77.51	88.97
NSW	98.90	102.20	105.64	106.37	107.38	91.90	94.39	69.96	54.09

MCL Volatility Factor (VF) Prediction									
Region	Qtr 2 2005	Qtr 3 2005	Qtr 4 2005	Qtr 1 2006	Qtr 2 2006	Qtr 3 2006	Qtr 4 2006	Qtr 1 2007	Qtr 2 2007
SA	1.80	1.80	1.80	2.00	2.70	2.50	2.30	2.30	2.10
QLD	1.90	1.70	1.80	1.90	2.40	2.10	2.00	2.10	2.80
VIC	1.40	1.50	1.50	1.30	2.20	2.40	2.30	2.20	2.40
NSW	2.30	2.50	2.60	3.20	2.70	2.40	2.30	2.20	1.70

MCL Average Price (P) Prediction									
Region	Qtr 2 2005	Qtr 3 2005	Qtr 4 2005	Qtr 1 2006	Qtr 2 2006	Qtr 3 2006	Qtr 4 2006	Qtr 1 2007	Qtr 2 2007
SA	36.93	36.33	36.22	31.69	38.22	37.46	40.81	38.77	39.69
QLD	31.58	29.79	28.60	22.45	28.77	28.50	30.30	26.39	28.55
VIC	30.01	28.00	28.03	25.83	30.26	32.30	35.13	35.23	37.07
NSW	43.00	40.88	40.63	33.24	39.77	38.29	41.04	31.80	31.82

Futures settlement price (1 day prior to QTR start)									
Region	Qtr 2 2005	Qtr 3 2005	Qtr 4 2005	Qtr 1 2006	Qtr 2 2006	Qtr 3 2006	Qtr 4 2006	Qtr 1 2007	Qtr 2 2007
SA	32.00	33.75	36.50	52.00	31.25	35.00	42.00	55.00	46.50
QLD	26.50	27.50	35.25	43.00	27.50	29.25	34.90	45.50	53.00
VIC	26.15	28.25	27.50	37.75	28.00	32.40	37.50	48.75	50.75
NSW	31.00	33.35	36.50	44.65	32.00	38.25	42.85	49.50	53.75

Futures Initial Margin (adjusted up by a factor of 2.14) to reflect the ratio of futures MWh to MCL MWh.									
Region	Qtr 2 2005	Qtr 3 2005	Qtr 4 2005	Qtr 1 2006	Qtr 2 2006	Qtr 3 2006	Qtr 4 2006	Qtr 1 2007	Qtr 2 2007
SA	1.96	2.23	1.94	5.16	1.37	0.68	0.97	4.17	2.65
QLD	2.16	1.16	1.94	2.38	1.77	0.78	1.94	2.38	3.73
VIC	2.45	2.14	1.94	2.98	1.37	0.97	1.26	3.77	3.04
NSW	2.16	1.94	2.04	3.08	1.96	0.97	2.91	3.08	3.14

¹⁵ The MCL credit support burden on retailers prior to Futures Offset arises from the facilitation charges associated with bank or state government backed letters of credit or guarantees. Such charges vary according to the credit quality of the retailer and the size of the credit support required.

Appendix 2: Case study of price risk mitigation delivered by Futures Offsets: Q2 2007

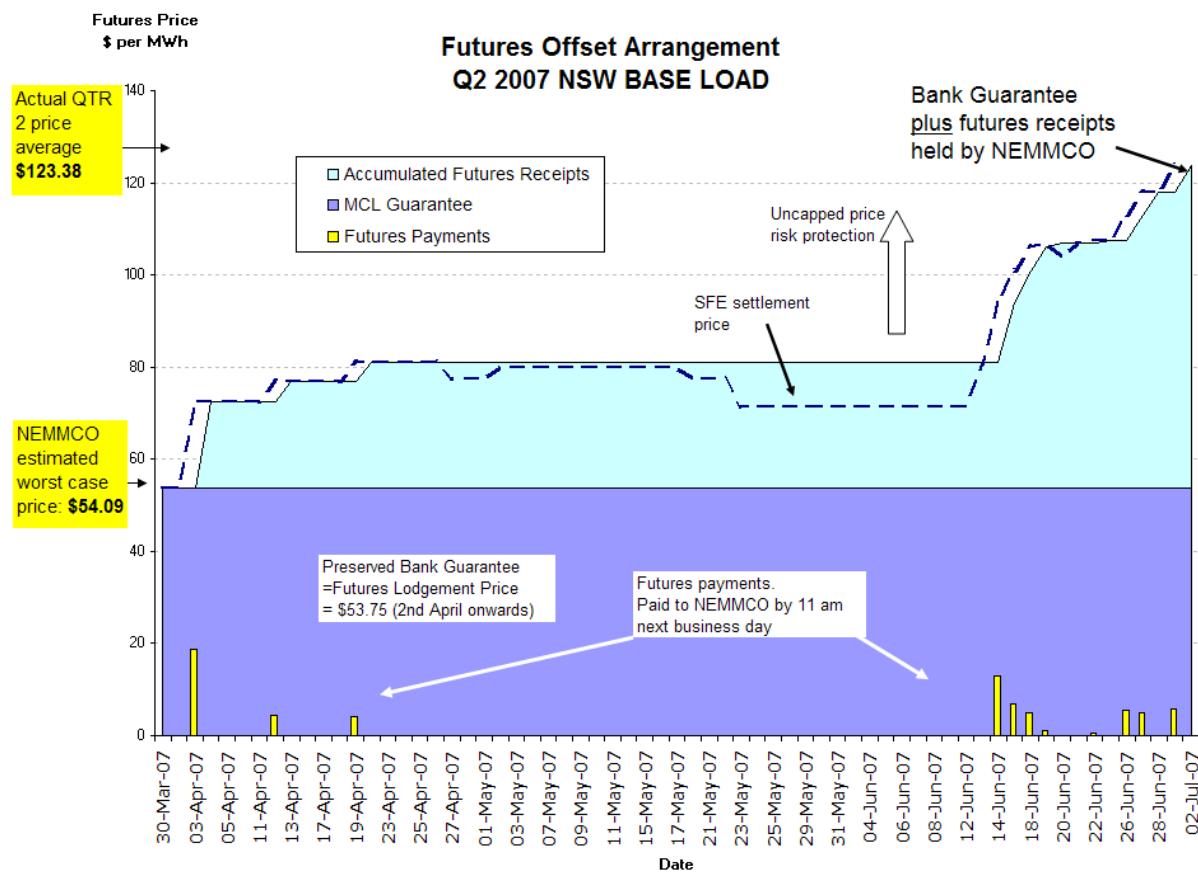
Futures contracts provide risk mitigation at any price outcome. This compares favourably to the existing NEMMCO credit support arrangements where guarantee support is limited to NEMMCO's MCL price prediction. Under normal MCL conditions (without reallocation) when higher than anticipated pool prices necessitate additional protection beyond the “capped” level of bank guarantees NEMMCO may be forced to rely on unsecured demands (spot market margin calls) on retailers. When a retailer receives a call notice from NEMMCO, the retailer has a defined amount of time in which to source additional collateral. The risk to NEM creditors is that a retailer may not be able to raise additional funds in this time.¹⁶ If retailers had been allowed to apply positive cash flows which were automatically generated from FOAs to meet NEMMCO spot market margin calls, this situation may have been avoided.

Other NEM retailers were also put at risk (and were likely to have incurred costs) due to the suspension of Energy One when NEMMCO was forced to instigate the RoLR procedures. The default of a larger retailer during Q2 2007 had the potential to trigger a domino effect of credit defaults involving numerous generators and retailers, spread via the OTC financial market.

The following diagram illustrates the additional risk mitigation benefit of receiving the positive cash flows associated with futures contracts held by retailers during periods of high pool prices. It demonstrates how FOAs would have provided additional protection to NEMMCO during Q2 2007 in NSW, where NEMMCO's worst case volatility-adjusted average price estimate of \$54.09/MWh (which determined MCL guarantee levels) was inadequate during that quarter where prices ultimately averaged \$123.75/MWh. If FOAs had been in place, NEMMCO could have been automatically credited with total cumulative futures cash flows equivalent to \$70.00/MWh in addition to residual bank guarantees held with NEMMCO equivalent to \$53.75/MWh creating a combined credit support level of \$123.75/MWh, exactly equal to the actual Q2 2007 pool price average.

¹⁶ National Electricity Code s3.15.22 and s3.15.23. Consider also the Default and Suspension notice issued by NEMMCO to retailer Energy One during Q2 2007, amidst onerous spot market margin calls instigated by NEMMCO in an attempt to compensate for inadequate MCL bank guarantees.

Rule change Request - Futures Offset Arrangements



Without futures protection, the limited nature of MCL bank guarantees may leave NEMMCO and its creditors substantially unsecured at times of high pool prices and at risk of a retailer under extreme financial stress not meeting a spot market margin call. Futures protection is not “capped” to a notional level like a rigid bank guarantee, and as such, NEMMCO may receive futures cash flow benefits at any potential price outcome.

Appendix 3. Examples of Notice of Futures Offset Arrangement

Notice of Futures Offset Arrangement (Example 1)

Retailer A Pty Ltd (Market Participant); and

Clearing Company Pty Ltd (SFE Clearing Participant) hereby request NEMMCO to register a Futures Offset Agreement (FOA) in relation to the electricity futures contracts described below. Upon registration of the FOA by NEMMCO, the Market Participant and the SFE Clearing Participant agree to be bound by the terms and conditions of Futures Offset Arrangements as specified in s3.15.11B of the National Electricity Rules.

Term of the FOA:

Starting Day: 30-Dec-2005

Termination Day: 6-April-2006

The futures contracts nominated to become subject to a FOA:

Contract Region: VIC

Futures product code: BVH6

The futures contract term: Q1 2006

Commencing with the half hour ending: 00:30 1-Jan-2006

Ending with the half hour ending: 24:00 31-Mar-2006

Futures contract load shape: BASE

Quantity of futures contracts: 1

MWhs incorporated in each futures contract: 2,160

The futures contract cash settlement day: Thursday 6-April-2006

The Futures Lodgement Price (\$/MWh): 37.75

Notice of Futures Offset Arrangement (Example 2)

Retailer B Pty Ltd (Market Participant); and

Clearing Company Pty Ltd (SFE Clearing Participant) hereby request NEMMCO to register a Futures Offset Agreement (FOA) in relation to the electricity futures contracts described below. Upon registration of the FOA by NEMMCO, the Market Participant and the SFE Clearing Participant agree to be bound by the terms and conditions of Futures Offset Arrangements as specified in s3.15.11B of the National Electricity Rules.

Term of the FOA:

Starting Day: 30-Sep-2005

Termination Day: 6-Jan-2006

The futures contracts nominated to become subject to a FOA:

Contract Region: NSW

Futures product code: BNZ5

The futures contract term: Q4 2005

Commencing with the half hour ending: 00:30 1-Oct-2005

Ending with the half hour ending: 24:00 31-Dec-2005

Futures contract load shape: BASE

Quantity of futures contracts: 1

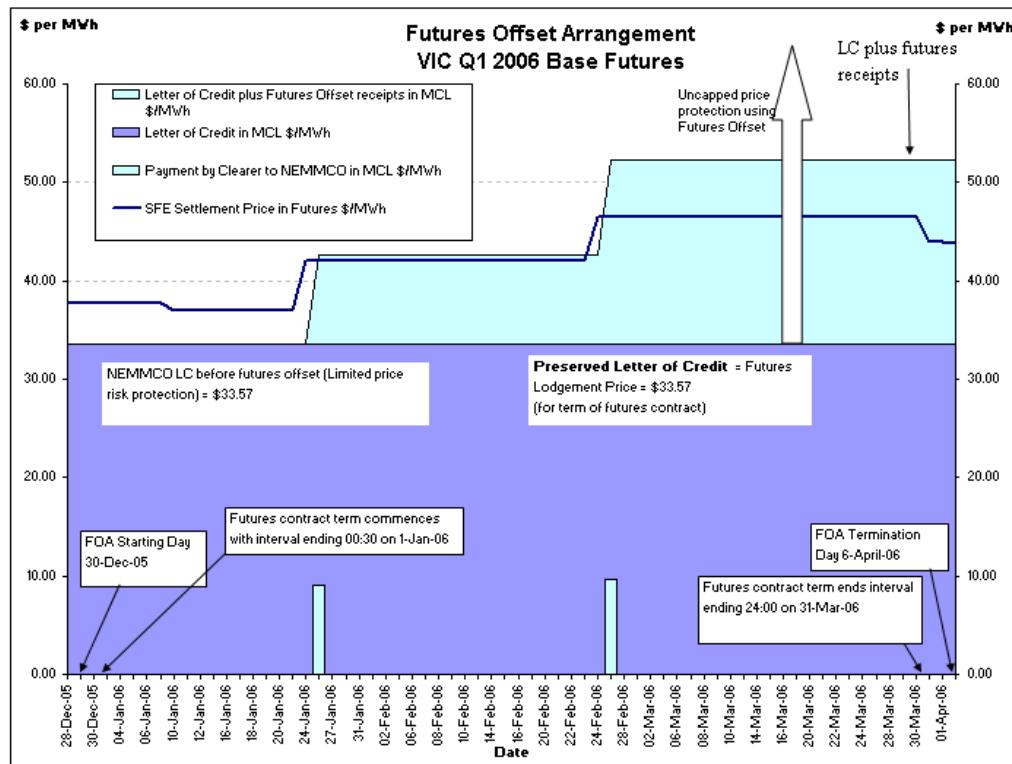
MWhs incorporated in each futures contract: 2,208

The futures contract cash settlement day: Friday 6-Jan-2006

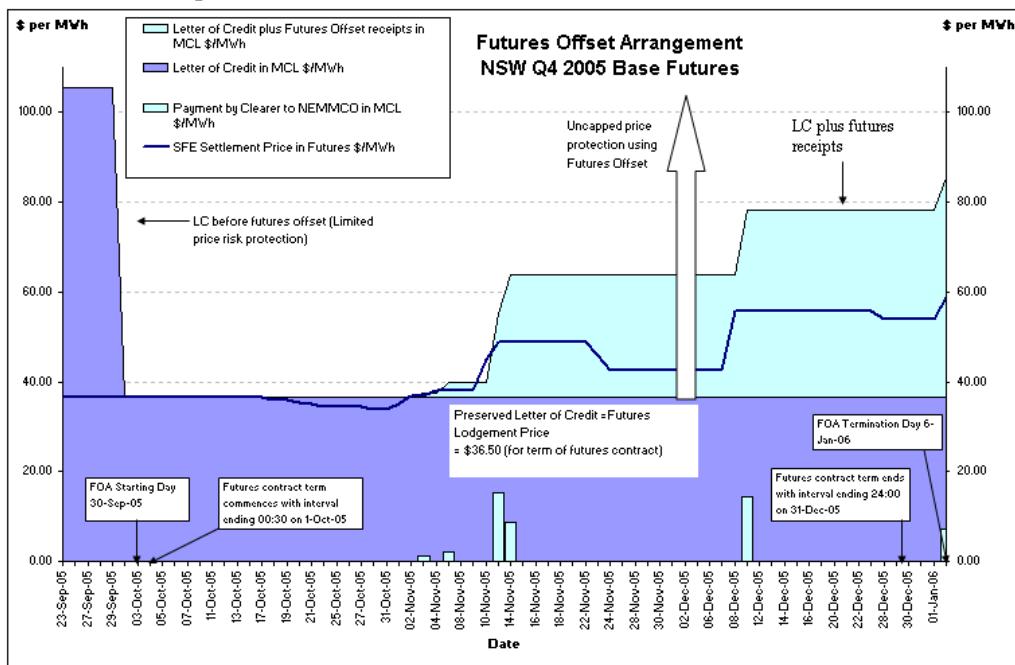
The Futures Lodgement Price (\$/MWh): 36.50

Appendix 4. Examples of Futures Offset Arrangements cash flows (diagrams)

Example 1. Vic Q1 2006. Assume FOA lodged with a Futures Lodgement Price (FLP) equal to the last futures settlement price preceding the start of the quarter (i.e. \$33.57/MWh). “LC” denotes (bank letter of credit/bank guarantee).



Example 2: NSW Q4 2005. Assume FOA lodged with a FLP equal to the last futures settlement price preceding the start of the quarter (i.e. \$36.50/MWh).



Rule change Request - Futures Offset Arrangements

Example 1: Vic Q1 2006. Cash flows and bank guarantee (letter of credit) balance throughout MCL period. n.b. A \$1/MWh increase in futures value creates a larger \$/MWh contribution to MCL (if MCL MWh < futures MWh).

Worked example of Futures Offset Arrangement - cashflows and prudential impact. VIC Base Q1 2006 (BVH6). 1 contract assumed.

Date	SFE Settlement Price in Futures \$/MWh	Letter of Credit in MCL \$/MWh	Payment from Clearer to NEMMCO in Futures \$/MWh	Payment by Clearer to NEMMCO in MCL \$/MWh	Accumulated Futures Receipts in MCL \$/MWh	Letter of Credit plus Futures Offset receipts in MCL \$/MWh	Futures MWh = 2,160 per contract. MCL MWh = 1,008. FLP = \$37.75
Fri, 23 Dec 2005	37.75	33.57				33.57	
Wed, 28 Dec 2005	37.75	33.57				33.57	
Thu, 29 Dec 2005	37.75	33.57				33.57	
Fri, 30 Dec 2005	37.75	33.57				33.57	FOA Starting Day. MCL < FLP hence LC unchanged (for MCL period covered by futures term, commencing half hour ending 00:30 1-Jan-2006)
Tue, 3 Jan 2006	37.75	33.57				33.57	First (potential) payment day: $(37.75 - 33.57) * 2160 \text{ hrs} * 1 \text{ MW} = 0$
Wed, 4 Jan 2006	37.75	33.57				33.57	
Thu, 5 Jan 2006	37.75	33.57				33.57	
Fri, 6 Jan 2006	37.75	33.57				33.57	
Mon, 9 Jan 2006	37.75	33.57				33.57	
Tue, 10 Jan 2006	37	33.57				33.57	
Wed, 11 Jan 2006	37	33.57				33.57	
Thu, 12 Jan 2006	37	33.57				33.57	
Fri, 13 Jan 2006	37	33.57				33.57	
Mon, 16 Jan 2006	37	33.57				33.57	
Tue, 17 Jan 2006	37	33.57				33.57	
Wed, 18 Jan 2006	37	33.57				33.57	
Thu, 19 Jan 2006	37	33.57				33.57	
Fri, 20 Jan 2006	37	33.57				33.57	
Mon, 23 Jan 2006	37	33.57				33.57	
Tue, 24 Jan 2006	42	33.57				33.57	
Wed, 25 Jan 2006	42	33.57	4.25	9.11	9.11	42.68	NEMMCO receives: $(42.00 - 33.57) * 2160 \text{ hrs} * 1 \text{ MW} = \$9,180$
Fri, 27 Jan 2006	42	33.57				9.11	42.68
Mon, 30 Jan 2006	42	33.57				9.11	42.68
Tue, 31 Jan 2006	42	33.57				9.11	42.68
Wed, 1 Feb 2006	42	33.57				9.11	42.68
Thu, 2 Feb 2006	42	33.57				9.11	42.68
Fri, 3 Feb 2006	42	33.57				9.11	42.68
Mon, 6 Feb 2006	42	33.57				9.11	42.68
Tue, 7 Feb 2006	42	33.57				9.11	42.68
Wed, 8 Feb 2006	42	33.57				9.11	42.68
Thu, 9 Feb 2006	42	33.57				9.11	42.68
Fri, 10 Feb 2006	42	33.57				9.11	42.68
Mon, 13 Feb 2006	42	33.57				9.11	42.68
Tue, 14 Feb 2006	42	33.57				9.11	42.68
Wed, 15 Feb 2006	42	33.57				9.11	42.68
Thu, 16 Feb 2006	42	33.57				9.11	42.68
Fri, 17 Feb 2006	42	33.57				9.11	42.68
Mon, 20 Feb 2006	42	33.57				9.11	42.68
Tue, 21 Feb 2006	42	33.57				9.11	42.68
Wed, 22 Feb 2006	42	33.57				9.11	42.68
Thu, 23 Feb 2006	42	33.57				9.11	42.68
Fri, 24 Feb 2006	46.5	33.57				9.11	42.68
Mon, 27 Feb 2006	46.5	33.57	4.50	9.64	18.75	52.32	NEMMCO receives: $(46.50 - 33.57) * 2160 \text{ hrs} * 1 \text{ MW} = \$9,720$
Tue, 28 Feb 2006	46.5	33.57				18.75	52.32
Wed, 1 Mar 2006	46.5	33.57				18.75	52.32
Thu, 2 Mar 2006	46.5	33.57				18.75	52.32
Fri, 3 Mar 2006	46.5	33.57				18.75	52.32
Mon, 6 Mar 2006	46.5	33.57				18.75	52.32
Tue, 7 Mar 2006	46.5	33.57				18.75	52.32
Wed, 8 Mar 2006	46.5	33.57				18.75	52.32
Thu, 9 Mar 2006	46.5	33.57				18.75	52.32
Fri, 10 Mar 2006	46.5	33.57				18.75	52.32
Mon, 13 Mar 2006	46.5	33.57				18.75	52.32
Tue, 14 Mar 2006	46.5	33.57				18.75	52.32
Wed, 15 Mar 2006	46.5	33.57				18.75	52.32
Thu, 16 Mar 2006	46.5	33.57				18.75	52.32
Fri, 17 Mar 2006	46.5	33.57				18.75	52.32
Mon, 20 Mar 2006	46.5	33.57				18.75	52.32
Tue, 21 Mar 2006	46.5	33.57				18.75	52.32
Wed, 22 Mar 2006	46.5	33.57				18.75	52.32
Thu, 23 Mar 2006	46.5	33.57				18.75	52.32
Fri, 24 Mar 2006	46.5	33.57				18.75	52.32
Mon, 27 Mar 2006	46.5	33.57				18.75	52.32
Tue, 28 Mar 2006	46.5	33.57				18.75	52.32
Wed, 29 Mar 2006	46.5	33.57				18.75	52.32
Thu, 30 Mar 2006	46.5	33.57				18.75	52.32
Fri, 31 Mar 2006	43.95	33.57				18.75	52.32
Sat, 1 Apr 2006	43.95	33.57				18.75	52.32
Thu, 6 Apr 2006	43.88	33.57				18.75	52.32
							Last trading day of futures contract. Futures contract term ends half hour ending Standard MCL calculation for periods after Q1 2006 (assumed 33.57)
							FOA Termination Day. Futures Cash Settlement Day. Futures Cash Settlement Price = 43.88

$$\text{Gross MCL (approx/MWh)} = \text{PR} \times \text{VFR} = \$25.83 \times 1.3 = \$33.58.$$

For illustrative purposes, figures assume static NEMMCO MCL calculation inputs during current quarter and next quarter and that a similar FOA is registered for Q2 2006.

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Example 2: NSW Q4 2005. Cash flows and bank guarantee (letter of credit) balance throughout MCL period. n.b. A \$1/MWh increase in futures value creates a larger \$/MWh contribution to MCL (if MCL MWh < futures MWh).

Worked example of Futures Offset Arrangement - cashflows and prudential impact. NSW Base Q4 2005 (BNZ5). 1 contract assumed.

Date	SFE Settlement Price in Futures \$/MWh	Letter of Credit in MCL \$/MWh	Payment from Clearer to NEMMCO in Futures \$/MWh	Payment by Clearer to NEMMCO in MCL \$/MWh	Accumulated Futures Receipts in MCL \$/MWh	Letter of Credit plus Futures Offset receipts in MCL \$/MWh	Futures MWh = 2,208 per contract. MCL MWh = 1,008. FLP = \$36.50
Fri, 23 Sep 2005	36.50	105.63				105.63	
Mon, 26 Sep 2005	36.50	105.63				105.63	
Tue, 27 Sep 2005	36.75	105.63				105.63	
Wed, 28 Sep 2005	36.50	105.63				105.63	
Thu, 29 Sep 2005	36.50	105.63				105.63	
Fri, 30 Sep 2005	36.50	36.50			36.50		FOA Starting Day. MCL reduced to FLP (for MCL period covered by futures term, commencing half hour interval 00:30 1-Oct-2005)
Mon, 3 Oct 2005	36.50	36.50			36.50		First (potential) payment day: (36.50-FLP) * 2208 MWh * 1 contract = 0
Tue, 4 Oct 2005	36.50	36.50			36.50		
Wed, 5 Oct 2005	36.50	36.50			36.50		
Thu, 6 Oct 2005	36.50	36.50			36.50		
Fri, 7 Oct 2005	36.50	36.50			36.50		
Mon, 10 Oct 2005	36.50	36.50			36.50		
Tue, 11 Oct 2005	36.50	36.50			36.50		
Wed, 12 Oct 2005	36.50	36.50			36.50		
Thu, 13 Oct 2005	36.50	36.50			36.50		
Fri, 14 Oct 2005	36.50	36.50			36.50		
Mon, 17 Oct 2005	36.50	36.50			36.50		
Tue, 18 Oct 2005	36.00	36.50			36.50		
Wed, 19 Oct 2005	36.00	36.50			36.50		
Thu, 20 Oct 2005	35.25	36.50			36.50		
Fri, 21 Oct 2005	35.00	36.50			36.50		
Mon, 24 Oct 2005	34.50	36.50			36.50		
Tue, 25 Oct 2005	34.50	36.50			36.50		
Wed, 26 Oct 2005	34.50	36.50			36.50		
Thu, 27 Oct 2005	34.50	36.50			36.50		
Fri, 28 Oct 2005	34.00	36.50			36.50		
Mon, 31 Oct 2005	34.00	36.50			36.50		
Tue, 1 Nov 2005	35.00	36.50			36.50		
Wed, 2 Nov 2005	37.00	36.50			36.50		
Thu, 3 Nov 2005	37.00	36.50	0.50	1.10	1.10	37.60	NEMMCO receives: (37.00-DSPh) * 2208 MWh * 1 contract = \$1,104
Fri, 4 Nov 2005	38.00	36.50			1.10	37.60	
Mon, 7 Nov 2005	38.00	36.50	1.00	2.19	3.29	39.79	NEMMCO receives: (38.00-DSPh-1) * 2208 MWh * 1 contract = \$2,208
Tue, 8 Nov 2005	38.00	36.50			3.29	39.79	
Wed, 9 Nov 2005	38.00	36.50			3.29	39.79	
Thu, 10 Nov 2005	45.00	36.50			3.29	39.79	
Fri, 11 Nov 2005	49.00	36.50	7.00	15.33	18.62	55.12	NEMMCO receives: (45.00-DSPh-1) * 2,208 MWh * 1 contract = \$15,457
Mon, 14 Nov 2005	49.00	36.50	4.00	8.76	27.36	63.88	NEMMCO receives: (49.00-DSPh-1) * 2,208 MWh * 1 contract = \$8,832
Tue, 15 Nov 2005	49.00	36.50			27.38	63.88	
Wed, 16 Nov 2005	49.00	36.50			27.38	63.88	
Thu, 17 Nov 2005	49.00	36.50			27.38	63.88	
Fri, 18 Nov 2005	49.00	36.50			27.38	63.88	
Mon, 21 Nov 2005	49.00	36.50			27.38	63.88	
Tue, 22 Nov 2005	49.00	36.50			27.38	63.88	
Wed, 23 Nov 2005	45.75	36.50			27.38	63.88	
Thu, 24 Nov 2005	42.50	36.50			27.38	63.88	
Fri, 25 Nov 2005	42.50	36.50			27.38	63.88	
Mon, 28 Nov 2005	42.50	36.50			27.38	63.88	
Tue, 29 Nov 2005	42.50	36.50			27.38	63.88	
Wed, 30 Nov 2005	42.50	36.50			27.38	63.88	
Thu, 1 Dec 2005	42.50	36.50			27.38	63.88	
Fri, 2 Dec 2005	42.50	36.50			27.38	63.88	
Mon, 5 Dec 2005	42.50	36.50			27.38	63.88	
Tue, 6 Dec 2005	42.50	36.50			27.38	63.88	
Wed, 7 Dec 2005	42.50	36.50			27.38	63.88	
Thu, 8 Dec 2005	55.60	36.50			27.38	63.88	
Fri, 9 Dec 2005	55.60	36.50	6.60	14.46	41.84	78.34	NEMMCO receives: (55.60-DSPh) * 2,208 MWh * 1 contract = \$14,572.80
Mon, 12 Dec 2005	55.60	36.50			41.84	78.34	
Tue, 13 Dec 2005	55.60	36.50			41.84	78.34	
Wed, 14 Dec 2005	55.60	36.50			41.84	78.34	
Thu, 15 Dec 2005	55.60	36.50			41.84	78.34	
Fri, 16 Dec 2005	55.60	36.50			41.84	78.34	
Mon, 19 Dec 2005	55.60	36.50			41.84	78.34	
Tue, 20 Dec 2005	55.60	36.50			41.84	78.34	
Wed, 21 Dec 2005	55.60	36.50			41.84	78.34	
Thu, 22 Dec 2005	55.60	36.50			41.84	78.34	
Fri, 23 Dec 2005	55.60	36.50			41.84	78.34	
Wed, 28 Dec 2005	54.00	36.50			41.84	78.34	
Thu, 29 Dec 2005	54.00	36.50			41.84	78.34	
Fri, 30 Dec 2005	54.00	36.50			41.84	78.34	Last trading day of futures contract
Sat, 31 Dec 2005	54.00	36.50			41.84	78.34	Futures contract term ends half hour ending 24:00
Sun, 1 Jan 2006	54.00	36.50			41.84	78.34	Standard MCL calculation for periods after Q1 2006 (assumed 36.50)
Fri, 6 Jan 2006	58.83	36.50	3.23	7.08	48.91	85.41	FOA Termination Day. Futures Cash Settlement Day. Futures Cash Settlement Price = 58.83. NEMMCO receives: (Cash Settlement Price-DSPh) * 2,208 MWh * 1 contract = \$7,131.84

$$\text{Gross MCL (approx/MWh)} = \text{PR} \times \text{VFR} = \$33.24 \times 3.2 = \$105.64.$$

For illustrative purposes, figures assume static NEMMCO MCL calculation inputs during current quarter and next quarter and that a similar FOA is registered for Q1 2006.

Appendix 5. Suggested formula and worked examples for calculating MCL reduction for Futures Offset Arrangements

Suggested Formula

Max [(PR x VFR – FLP) x FLR x T, 0]

Where for each Futures Offset Arrangement:

FLP represents the futures lodgement price covering each Market Region R;

FLR represents the associated average daily energy of Futures Offset Arrangements for the Market Participant where the offset is to be calculated with reference to the spot electricity price of Region R.

PR represents NEMMCO's estimate of the average future pool price for each Market Region R;

VFR is a volatility factor, which ensures that the *maximum credit limit* is not exceeded more than once in 48 months;

T is the number of days assumed in NEMMCO's *maximum credit limit credit period* which coincide with days in the term of the futures contracts which are the subject of the Futures Offset Arrangement.

Worked examples of calculation of MCL reduction for Futures Offset Arrangements

Consider: **NSW Q4 2005.**

MCL calculation prior to Futures Offset Arrangement:

Assume NEMMCO predicts Market Participant's average quantity of energy use for Q4 NSW = 24MWh per day.

MCL for NSW Q4 2005 prior to futures offset:

$$\begin{aligned} &= PR \times VFR \times LR \times T \\ &= \$40.63 \times 2.6 \times (24 \text{ MWh}) \times 42 \text{ days} \\ &= \$105.64 \times 24 \text{ MWh} \times 42 \text{ days} \\ &= \$ 106,483.10 \end{aligned}$$

MCL reduction under Futures Offset Arrangement

Now assume a FOA is lodged in accordance with the Notice of FOA as per in appendix 3 (NSW Q4 2005: 1 contract representing 24 MWh per day).

1. MCL Reduction as at 1-Oct-05

Assume MCL reduction for Futures Offset Arrangement is being calculated on 1-Oct-05, a day when the futures term fully encompasses the 42 day MCL calculation period.

$$\text{MCL Reduction} = \text{Max} [(PR \times VFR – FLP) \times FLR \times T, 0]$$

$$= \text{Max} [(\$40.63 \times 2.6 – \$36.50) \times (24 \text{ MWh}) \times 42 \text{ days}, 0]$$

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= \$69,691.10

2. MCL Reduction as at 9-Dec-05

Assume that the MCL reduction for Futures Offset Arrangement is being calculated on 9-Dec-05 when the 42 day MCL calculation period extends beyond the end of the futures contract term (Q4 2005 ends 31-Dec-05) by 20 days, and no Futures Offset Arrangements or reallocations are registered for Q1 2006.

$$\begin{aligned}\textbf{MCL Reduction} &= \text{Max } [(PR \times VFR - FLP) \times FLR \times T, 0] \\ &= \text{Max } [(\$40.63 \times 2.6 - \$36.50) \times (24 \text{ MWh}) \times (\mathbf{42-20}) \text{ days}, 0] \\ &= \$ 36,504.86\end{aligned}$$

Appendix 6. Background Information – Efficiencies delivered by Futures Offset Arrangements

1 Background to duplication of credit support burden and the existing Rules

In 2002, the Parer Report cited an unnecessary credit support burden faced by NEM participants. “Retailers currently have to lodge around \$1.6 billion in bank guarantees to back their pool settlements. These guarantees take no account of any financial contracts that significantly reduce their pool exposure. They are, therefore, larger than are necessary, and then in addition the retailers must allow for the capital to back the risk associated with their financial contracts.”¹⁷ These guarantees (or letters of credit) are intended to ensure the payment by NEMMCO of pool price purchases to generators that provide energy to the pool.

To calculate the size of guarantees required from banks (and state governments) intended to secure the uncertain future pool market liabilities of retailers, NEMMCO estimates its worst-case exposure to retailers based on the MCL formula. The primary inputs into this formula include a prediction of the average price of electricity for the upcoming quarter (and predicted volatility of this price) which NEMMCO bases on historical pool price observations and the anticipated energy consumption of the market participant.¹⁸

The Rules currently allow for retailers to reduce their bank guarantee-posting requirements associated with future pool price outcomes by entering into “ex-ante” reallocations.¹⁹ Ex-ante reallocation transactions are financial arrangements between NEMMCO, a paying participant (usually a retailer) and a receiving participant (usually a generator). The generator agrees (via a reallocation request to NEMMCO) to forgo future pool receipts in favour of a designated retailer. In return, NEMMCO reduces the guarantee support required from the retailer by deducting reallocated amounts within the MCL formula. Effectively, NEMMCO facilitates the generator selling a financial swap derivative with a fixed price of \$0.00 /MWh (or another fixed price, in accordance with NEMMCO’s procedures related to reallocation) to the retailer, with the generator being permitted to use *potential* future generation as trading collateral.

Although not provided for in the current Rules, it can be assumed that the retailer and generator enter into an off market OTC financial transaction to compensate the generator for agreeing to forgo future pool revenue from NEMMCO. Price and volume information associated with these transactions is not publicly disclosed.

2 How the proposed Rules supporting Futures Offset Arrangements will support efficiency improvements to the NEM.

The integration of electricity FOAs in the spot market prudential framework will contribute to the achievement of the NEO in the following ways:

2.1 Futures Offset Arrangements will reduce credit risks in the NEM

FOAs will assist in reducing credit risk exposures in the NEM while lowering the credit support funding costs incurred by NEM Market Participants²⁰. SFE Clearing Participants (supported by the SFE Clearing Corporation) provide an incremental level of prudential safeguard and credit risk mitigation in comparison to existing reallocation arrangements, particularly in instances where prices increase rapidly due to generation outages and intra-regional constraints, precisely when the NEM spot market prudential

¹⁷ W.R Parer, Towards A Truly National And Efficient Energy Market, Commonwealth of Australia 2002. p.31.

¹⁸ Method for Determining Maximum Credit Limits, Version 4, NEMMCO 21-4-2004.

¹⁹ Unless otherwise stated, a reference to “reallocation” refers to “ex-ante reallocation”

²⁰ Futures contracts such as the d-cypha SFE Electricity futures attract a zero credit risk weighting under Basel II. FOAs as proposed, would have reduced MCL guarantee requirements for NEM retailers by up to 68% (e.g. NSW and SA Q2 2006).

framework is most vulnerable. The failure of a generator does not affect the contractual performance of a bought futures contract facilitated by a SFE Clearing Participant on behalf of a retailer, even if the sale of the futures contract was originally initiated on behalf of a generator that subsequently suffers a generation outage.

In comparison, current ex-ante reallocation arrangements involve NEMMCO relying on an unsecured generator (albeit with limited support via the Prudential Margin) being available to generate with absolute certainty in the future. Reliance on unsecured potential future generation creates undesirable risk of a reallocated generator failing to generate and of that failure in itself creating high spot prices at a time when the spot market prudential arrangements are least able to absorb them, as the retailer's commitment to NEMMCO becomes unsecured without warning²¹.

FOAs involve a residual component of the MCL (equivalent to the price at which the FOA is registered) being retained as bank guarantees, providing additional credit support to NEMMCO. Under the existing ex-ante reallocation arrangements, no residual bank guarantees (other than the small prudential margin) are retained, exposing NEMMCO's creditors to the operational risk of a reallocated generator.

2.2 Duplication of credit support is eliminated with Futures – not merely transferred to generators

Existing ex-ante reallocations necessitate large off-market OTC commitments between participants, and create significant inefficiencies and risks, predominately associated with counterparty default risk. This arises under ex-ante reallocation because the risk of retailer default is merely transferred from NEMMCO to reallocating generators. If the retailer defaults on OTC payments to the generator, the generator will suffer a loss. The magnitude of such credit risk is significant for OTC reallocation arrangements as evidenced by NEMMCO's own insistence for financial guarantees to cover the equivalent risk. Current reallocations normally involve the generator forgoing large gross pool generation receipts, such that a supporting OTC transaction must compensate the generator for the full-agreed price (in \$/MWh) multiplied by the quantity of energy (in MW/hour) multiplied by the entire term of the deal (in hours). Settlements received under these arrangements far exceed cash flows required to secure the obligations arising from futures contracts facilitated through a Central Counterparty (CCP) Clearer such as the SFECC. Futures cash flow obligations are much smaller and more efficient because futures are cash settled each business day and settlement exposures are not allowed to accumulate for 4 weeks or longer as in the case of longer-term reallocation contracts (or normal NEMMCO settlement arrangements).

The pricing of supporting OTC transactions and the transferral of risks from NEMMCO to generators are cited by market participants as being significant impediments to the success of the existing reallocation mechanism.

In order to be compensated for the additional risk involved in current reallocations, generators should logically require a credit risk margin to be paid by the retailer, which is reflected in the price of OTC transactions that support NEMMCO reallocation agreements. Moreover, it is impractical for retailers to seek reallocation transactions with only one generator (unless the retailer and generator are vertically integrated). The retailer will wish to have a choice of generators to select from when arranging for a reallocation transaction for reasons of competitiveness and liquidity. Many generators refuse to enter into reallocations. Generator reallocation support is unlikely to be constantly available on request from the same generator and as a result, retailers will seek to establish pre-emptive credit support arrangements (e.g. bank guarantees) with several generators. To enable any practical choice of reallocation supply options,

²¹ E.g. Consider the effect of a fully ex-ante reallocated generator suddenly being unable to dispatch, while the reallocated retailer has received a full MCL offset and guarantee reduction on the basis of the reallocation. If the generator outage caused or occurred during a period of \$10,000/MWh prices, NEMMCO may be exposed to a prudential shortfall within one or two hours, even if the reallocated generator had unpaid settlements owing to it.

the retailer must pre-emptively establish duplicate bank guarantee facilities or other forms of credit support arrangements, further exacerbating the cost of reallocation under the existing Rules.

2.3 **Futures credit support management delivers efficiency for NEM retailers due to netting and daily margining**

Through FOAs, hedge contract enforcement risks are reduced and borne by SFE Clearing Participants which are supported by the prudential framework of the SFECC, rather than being transferred (in gross amounts) to individual generators who are forced to obtain OTC credit support from reallocating retailers on an individual basis.

The substantial credit support efficiency advantage inherent in futures markets arises from the margining process facilitated by the SFECC, which requires credit support to cover only one day of worst case price movement²². SFECC achieves this efficiency through daily mark to market revaluation of the futures contract. NEMMCO ex-ante reallocations require much larger credit support amounts (e.g. in the form of bank guarantees) to cover much larger potential price movements over much longer terms. The security and efficiency of daily forward mark to market cash margining is not utilised by NEMMCO.

An example of the relative efficiency of FOAs is provided by noting that a \$1.96/MWh futures initial margin (which earns interest as a cash deposit, or may alternatively be posted in bank guarantee) deposited by a retailer to its SFE Clearing Participant would have reduced the retailer's guarantees to NEMMCO by \$75.40/MWh.²³

Additionally, the netting and novation efficiencies automatically delivered by electricity futures avoid unnecessary duplication of credit support postings to multiple parties. If no futures position is held by a NEM Participant, no initial margin deposit is required. Substantial credit support efficiency gains for NEM Participants will be achieved through leveraging off the licensed futures Clearing House (supervised by ASIC, the RBA and the ACCC), prudentially supervised SFE Clearing Participants (credit risk management experts), and the benefit of contract novation and daily margining efficiencies. Non-compulsory FOAs will allow for a substantial reduction in reliance on inflexible bank guarantee arrangements which provide limited coverage during periods of prolonged high pool prices²⁴ but are also a cumbersome and expensive credit support substitute for daily mark to market margining. Appendix 1 shows the percentage reduction in the credit support burden on NEM retailers that could have been achieved in every state region, since Q2 2005.

2.4 **Ex-post net settlement benefits are already being delivered by futures**

Daily futures variation margins automatically provide ex-post reallocation benefits for participants without the need to lodge a reallocation request with NEMMCO. Daily futures cash settlements ensure that cash flows associated with futures positions automatically reflect daily mark to market value. In a situation where a retailer has an "in the money" futures hedge position, the associated positive cash flow is automatically released to the retailer and may be applied to weekly NEMMCO settlement obligations, NEMMCO security deposit arrangements, meeting spot market call notices or for any other purpose. This compares favourably to the current ex-post reallocation arrangements supported by NEMMCO, which

²² To within a 99% confidence level. Additional prudential safeguards are provided (see www.asx.com.au for more details).

²³ Refer to Appendix 1 for MCL guarantee calculations. NSW Q2 2006 initial margin was \$1.96/MWh per contract. A NSW retailer could have applied a Futures Offset Arrangement to release \$75.38/MWh of MCL guarantees to NEMMCO for each futures contract funded at \$1.96/MWh throughout Q2 2006. Initial margin deposits may be met with cash or bank guarantee.

²⁴ E.g. Bank guarantee shortfalls during Q1 2006 in Victoria (and during Q2 2007 in NSW, QLD, SA and VIC) where NEMMCO's MCL price and volatility estimate (and bank guarantee coverage) were inadequate during higher than expected pool prices – necessitating reactionary (albeit unsecured) spot market collateral calls on retailers. The inefficiency of the existing methodology was illustrated by Q2 2006 where FOAs could have reduced the MCL credit support burden on NSW and SA retailers by 68%.

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require case by case agreement between generators and retailers before OTC and pool related cash flow offsets can be achieved. The identities of hedging counterparties do not need to be revealed to NEMMCO or other participants for retailers to benefit from futures cash flow offsets.²⁵ Futures cash settlements apply similarly to longer dated positions (up to 4 years ahead) such that any net positive cash flows from futures portfolios may be applied directly to NEMMCO payment obligations at any time.

2.5 Reduced systemic credit risk from a more diverse pool of prudential support providers

The Parer Report notes that “As the major domestic banks in Australia provide most of the guarantees to NEMMCO, the issue of concentration of risk within their lending portfolios is placing a constraint on the further extension of credit support.”²⁶ An increase in the spot market price ceiling, or the privatisation of government owned retailers (currently backed by state government credit support) is likely to cause a step-jump in NEMMCO related credit support requirements and concentration risk among a limited number of non-government credit support providers. The integration of electricity futures contracts in the NEM prudential framework will alleviate the concentration risk amongst financial support providers by instantaneously increasing the number of credit support providers actively involved in providing prudential support to NEMMCO. FOAs will provide an immediate solution to these structural challenges that otherwise pose a significant risk to the prudential security of the NEM.

At least 7 licensed SFE Clearing Participants (including several major international banks²⁷) which do not currently provide NEMMCO guarantee support on behalf of NEM retailers clear Australian electricity futures. Several SFE Clearing Participants are supportive of the proposed Rule change to support FOAs and welcome the opportunity to provide competition to the limited number of NEMMCO guarantee providers²⁸. Increased competition among providers of prudential support to NEMMCO will deliver lower transaction and funding costs to retailers and other Market Customers. Numerous SFE Clearing Participants wish to increase the scale of their clearing services to the electricity industry.

Currently, electricity futures exposures (measured in terms of initial margin balances) constitute a small proportion of clearing exposures on the SFECC. Multi-product and multi-participant diversification avoids undesirable risk concentrations within a single industry sector such as that which led to the Californian ISO defaulting on payments and the California Power Exchange filing for bankruptcy, amid high electricity spot price events in 2001.²⁹

SFE Clearing Participants are responsible for determining the credit worthiness of their clients and assume the credit default risk of their futures clients. SFECC enforces strict prudential requirements upon SFE Clearing Participants. NEM Participants may avoid having to attempt to administer a similar degree of prudential integrity and ongoing credit assessment of counterparties associated with NEMMCO reallocation derivatives by leveraging off the prudential strength, systems and expertise of the SFECC and its SFE Clearing Participants.

²⁵ OTC dealings also require counterparty identities to be revealed at the time of trade initiation. Futures trading enables completely anonymous transacting.

²⁶ W.R Parer, Towards A Truly National And Efficient Energy Market, Commonwealth of Australia 2002. p.166.

²⁷ SFE Clearing Participants include but are not limited to Credit Suisse, Deutsche Bank AG, UBS AG, Citigroup Global Markets Australia Pty Limited, Newedge Australia Pty Ltd, Fortis Clearing Sydney Pty Ltd and MF Global Australia Limited.

²⁸ The pool of guarantee providers contracted significantly when QLD Treasury Corp stopped providing credit support for Ergon and Energex, after the QLD retailers were privatised during 2007. If NSW government privatises its retailers, NSW Treasury Corp will no longer provide guarantees to NEMMCO for those retailers, placing increased pressure on existing non-government credit support providers.

²⁹ See Kaminski V (ed), “Managing Energy Price Risk, The New Challenges and Solutions”, Risk Books, London, 2004. p.433

2.6 Futures reduce NEMMCO's reliance on call notices to retailers

Under the current Rules, if a high spot price event occurs that exceeds NEMMCO's estimated price outcome (and bank guarantee coverage), a credit support shortfall is created, which may result in a reactionary spot market call notice on retailers. In this situation, NEMMCO's risks are higher than if it had the concurrent benefit of positively revalued futures contracts which could capture the value of the high price event (often pre-emptively) and create positive cash flow through futures variation margins. Even a 1 MW bid in a single futures contract that creates a higher SFE official daily settlement price in response to a high pool price event, could create a very large positive cash flow benefit for NEMMCO (from potentially millions of MWhs of FOAs). **Conversely, under the proposed Rule change to support FOAs NEMMCO never makes a payment (or repayment) against a Futures Offset position even if the value of the futures contract subsequently declines.**

2.7 Futures reduce systemic credit risk in the event of generation outages and intra regional constraints

The use of FOAs will reduce the risks associated with reliance on call notices to retailers where a “reallocated” generator experiences a significant unforeseen generation outage. Under the current ex-ante reallocation procedures, where a reallocated generator experiences an outage during the term of the reallocation, the generator may be unable to dispatch to meet the reallocation commitment to NEMMCO. In such a situation, NEMMCO may be forced to deregister the reallocation³⁰, resulting in an immediate increase in the MCL calculation and a credit support shortfall from the relevant retailer. If such an outage occurred during (or caused) a prolonged period of high prices, the retailer may find itself under financial pressure to meet this sudden increased obligation to NEMMCO, particularly where the reallocation covered a meaningful quantity of energy. NEMMCO's creditors (generators) are at risk until or unless the retailer covers the shortfall.³¹ In effect, NEM Generators are placed at financial risk due to the unreliability of another generator. If the generation shortfall occurs in one region, settlement obligations owed to generators from other regions are also at risk.

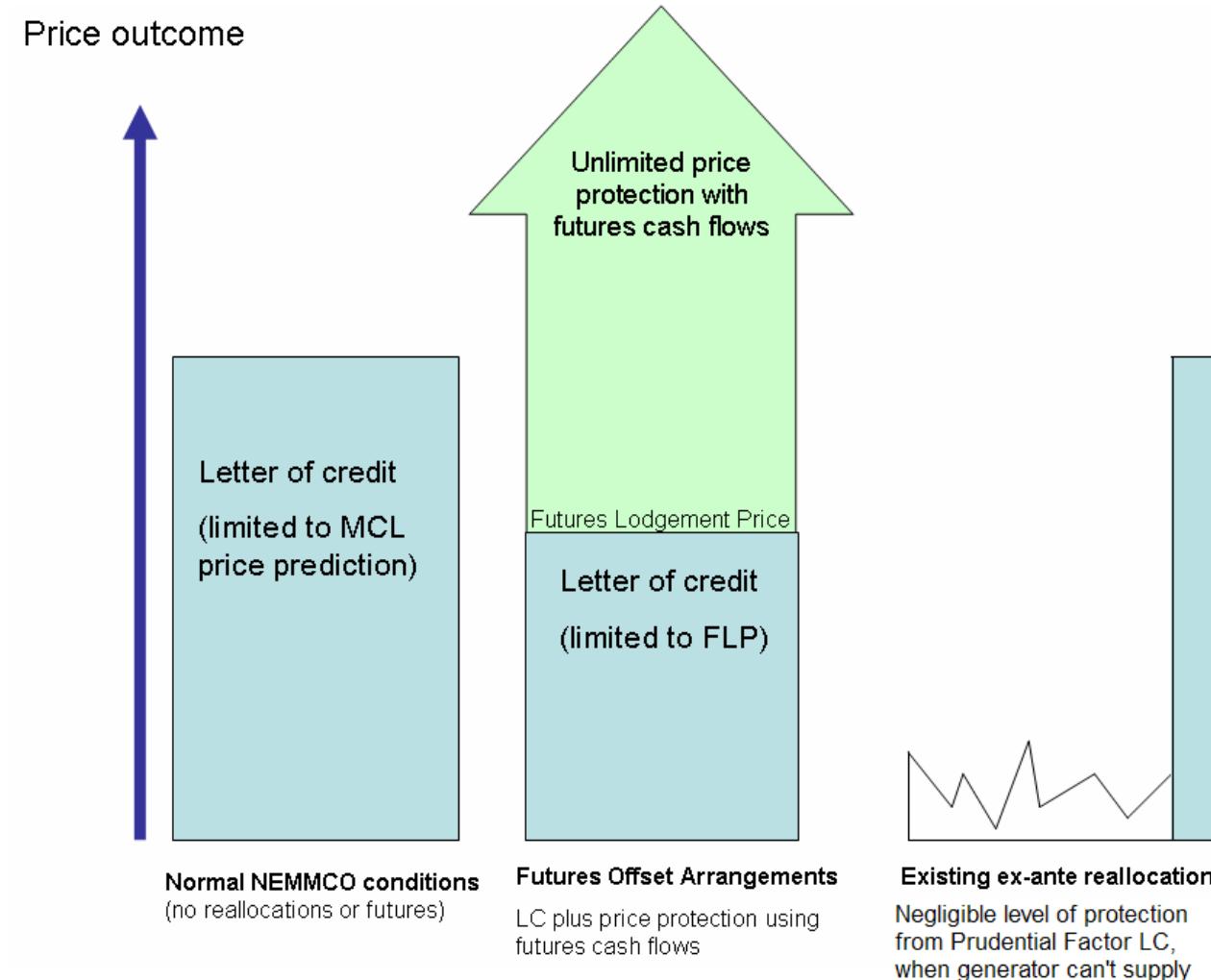
This creates perverse risk/return incentives because reallocating generators have an incentive (e.g. a margin built into the OTC transactions that support the reallocation) to enter into reallocations regardless of the reliability of their plant. These generators know that any potential losses arising from outages during the term of an imprudent reallocation hedge will be shared by other generators. The reallocating generator keeps all of the profit margin if unreliable plant output meets the future dispatch commitment under the reallocation but assumes only a fraction of the risk if its plant fails to generate.

A more efficient and reflective risk outcome is achieved under FOAs. In the event of a generator outage (or intra regional energy constraint), the retailer's commitment continues to be supported by the futures positions and there is no need for the retailer to post additional credit support when a generator fails. Other NEM generators may avoid over-reliance upon (unsecured) reactionary spot market call notices being paid by the retailer. Under FOAs, any outage risk lies with the unreliable generator (to the extent that they may have over-hedged their available capacity) rather than providing a plant-reliability “free ride” on other generators and NEMMCO creditors. See diagram 1 below.

³⁰ NEL s 3.15.21(i)(3)

³¹ National Electricity Code s3.15.22 and s3.15.23

Diagram 1. Comparison between price protection outcomes when a generator trips or cannot fully dispatch (e.g. due to water shortages) under (a) normal conditions (no reallocations or FOAs); (b) FOA; and (c) currently approved ex-ante reallocations.



NB: “LC” represents Bank Letter of Credit or Bank Guarantee.

2.8 Reduced risk of NEMMCO price prediction errors (regardless of reallocation)

NEMMCO applies the MCL formula to estimate an expected worst case average price for the upcoming calendar quarter, which is then used to set the level of bank guarantee support required from retailers’ banks. Under this methodology, NEMMCO considers historical price volatility and historical pool prices in each NEM region.³² Predicting future pool price outcomes based entirely upon historical observations is imprecise. This methodology takes no account of the inherent seasonality differences between calendar quarters. e.g. high Q1 (Quarter One) peak volatility versus low Q2 (Quarter Two) shoulder volatility. This methodology also ignores pre-emptive (market consensus) price expectations from the futures market e.g. where the futures market is pricing in extremely high spot price events (based on all sources of best available information).

³² NEMMCO, Method for Determining Maximum Credit Limits v4, 24-2-2004.

In the event that upcoming pool prices exceed NEMMCO's worst-case historical-based estimate, retailers may be under-provisioned and bank guarantees posted to NEMMCO may be insufficient to cover the payments owed by retailers³³. Additional calls for credit support must be relied upon in such events, placing additional financial stress on retailers and their limited pool of credit support providers. Even if NEMMCO commenced trying predict the price of a future quarter by using historical averages of the same type of quarter (e.g. the average historical pool price and volatility of previous Quarter 2 periods), NEMMCO could not have avoided the substantial shortfalls in MCL bank guarantees that occurred during Q2 2007. **Similarly, NEMMCO's change to MCL methodology to redefine the MCL quarters to coincide with the seasons rather than being aligned with the commonly accepted financial market calendar quarters would also have proven vastly inadequate in avoiding the credit support shortfalls experienced during June 2007.**

It is unlikely that any given weekly price outcome will equal NEMMCO's price and volatility estimate for the calendar quarter (even in the unlikely event that the estimation of the quarter average price proves to be accurate). Where a weekly price outcome significantly exceeds the anticipated average price of the quarter, bank guarantees in favour of NEMMCO may be insufficient to cover payments owed by the retailer and an additional spot market call for collateral must be made on retailers (and, hopefully met) to protect creditors (generators). In contrast, futures prices represent the best market consensus price expectation of the pool price average of the MCL quarter. The final cash settlement price of an electricity futures contract is exactly equal to the pool price average of the quarter (which NEMMCO is attempting to estimate). In this way, FOAs address the short comings and many of the inherent risks in existing MCL "set and forget" price forecasting methodology.

2.9 Futures provide risk coverage at all price levels – bank guarantees are limited.

Open and transparent futures markets reflect the best available market intelligence to estimate future average quarter pool price outcomes. The transparency of the electricity futures market assists in providing a leading indicator of upcoming pool prices based on real time market consensus as opposed to a backward-looking historical prediction from a single entity (i.e. NEMMCO). Electricity futures contracts are efficient price-following risk management tools. The futures contracts are cash settled against daily mark to market prices based on live market prices during the term of the quarter contract. The involvement of speculators, market makers and hedging participants from Australia and other countries assist electricity futures revaluations (and futures cash flows) to respond (often pre-emptively) to spot market price shocks. At contract expiry, the value of a futures contract is exactly equal to the average spot price of electricity during the quarter. See Appendix 2 for a worked example (Q2 2007 NSW).

³³ E.g. Q2 2007 where NEMMCO's MCL methodology predicted a worst case 54.09/MWh pool price average (approx) for NSW and the actual Q2 2007 pool price average was \$123.75, creating credit support shortfalls.

2.10 Reallocations are non-transparent – the futures market is transparent.

The existing NEMMCO reallocation market contravenes the principle of financial market price transparency. Price and volume information related to reallocation transactions (and the OTC contracts that support them) is never broadcast to the public, resulting in a lessening of financial hedge market price transparency. Decreased forward market transparency undermines essential investment signals for new generation, transmission infrastructure and new entrant energy retailers. The electricity futures market automatically provides real time publicly available forward curve price transparency out to 4 years ahead, complemented by the independent and transparent SFE daily price settlement process.

The exclusion of futures from the NEMMCO prudential framework creates distortionary commercial incentives for retailers to bilaterally arrange reallocation deals (with a limited number of same-region generators), rather than transact through an open and transparent international derivatives market. If liquidity in the futures market is crowded out by a NEMMCO reallocation market which receives discriminatory credit support offset treatment from NEMMCO, the NEM is at risk of losing:

1. A robust futures price curve that enables parties to make informed long term generation investment decisions and competitive retailer responses, and to hedge the financial risks associated with such investments;
2. Maximised hedge market liquidity that enables participants to transfer or exchange market risk at the lowest possible cost across the energy sector;
3. Credit risk mitigation and trading credit support efficiency benefits provided by the prudential strength of SFE Clearing Participants, supported by the licensed SFECC;
4. The ability for existing NEM Market Participants to observe a transparent market for spot market credit support offsets to enable them to enter into credit support offset arrangements at informed and efficient price levels.

2.11 Speculators are (practically) prohibited from the reallocations market – Futures Offsets address this issue

The Australian electricity futures market consists of domestic, interstate and international trading companies, which contribute to an optimised pool of hedge contract liquidity (and to a significant supply of potential FOAs) via a centrally cleared (and licensed) marketplace. The electricity futures and options market is growing exponentially due in part to the contracts (and traders) not being constrained to “must run” generation commitments. Financial markets such as cash settled futures markets are not constrained by “must run” generation commitments and hence support optimal participant access and unlimited hedge contract churn with maximum liquidity benefits. Without FOAs, the price of ex-ante reallocation derivative contracts is likely to be distorted (expensive) due to limited competition among a small group of base load generators in any NEM region.

Domestic and international non-bank trading entities which are very active in the Australian electricity futures market and are some of the most significant providers of market liquidity (and potential suppliers of FOAs) yet are excluded from NEMMCO reallocation derivatives.³⁴ Nonetheless, due to the support of SFE Clearing Participants, and the superior credit support efficiencies of futures mark to market margining, these non-bank trading specialists can immediately provide significant volumes of Futures Offsets to NEM retailers, upon FOAs being supported by the National Electricity Rules.

³⁴ Ironically, unsecured NEM Generator participants are currently permitted to “short sell” ex-ante reallocation derivatives via NEMMCO, despite not meeting the Acceptable Credit Criteria of s 3.3.4 or being supported by a SFE Clearing Participant. Intraregional constraints occur frequently within NEM regions, undermining the ability for same-region generators to meet meaningful “must run” ex-ante reallocation commitments.

2.12 Interstate trading is prohibited under current reallocations – futures solve this problem

Current ex-ante reallocation procedures prohibit interstate trading. NEMMCO is unable to accept the risk of ex-ante reallocations in the absence of firm transmission settlement rights that may otherwise allow a generator to supply fungible energy to the same pool region as an interstate retailer (e.g. consider the Victorian blackouts of January 2007 caused by an interconnect outage). This prevents generators from providing access to reallocation transactions to interstate retailers and Market Customers and will continue to severely restrict liquidity and competition in the regionalised reallocation derivative markets.³⁵

Interstate generators (or any electricity futures trader) can sell electricity futures which can be applied by a NEM retailer via a FOA, without requiring the futures seller's knowledge or permission. In this way FOAs will continue to support and be supported by interstate and international trade.

2.13 Futures reduce the incentives for free-riding on other creditors (e.g. generators) under ex-post reallocations

Under the current arrangements, generators that have lodged ex-post reallocations do not share in the default burden created by the default of a retailer (to the extent that the generator has reallocated).³⁶ This encourages generators to commit to otherwise uncommercial reallocation arrangements with retailers, to the potential detriment of other generators. Generators that have entered into the largest negatively-valued OTC contract positions due for settlement are better placed to supply ex-post reallocation offsets to retailers. FOAs eliminate the ability for generators to "free ride" off other generators, by using reallocations to jump the NEMMCO creditor queue.

The absence of reallocation price transparency and the inability for NEMMCO to ascertain whether a reallocation is transacted at fair value may also create undesirable legal implications for NEMMCO and its creditors under Corporations Law (both for ex-ante reallocations and ex-post reallocations) particularly where the retailer and the reallocating generator are "related entities" (i.e. vertically integrated) and a court deems the transactions to be void.³⁷

2.14 Futures Offsets reduce the incentive for NEM retailers to deliberately trigger their own default/suspension to NEMMCO

High pool prices such as those which occurred during Q2 2007 can create perverse incentives for a retailer to deliberately default to NEMMCO and/or deliberately become suspended from being a NEM Market Customer. By being suspended from being a Market Customer, a retailer retains the benefit of its profitable financial hedge contracts while forcing other retailers to inherit its unprofitable customer supply commitments via the RoLR provisions. If the retailer has a FOA in place, the benefit of windfall cash profits from the retailer's futures hedges would be retained by NEMMCO (in a Security Deposit Arrangement), reducing the retailer's incentive to deliberately trigger a suspension and reducing associated risks to other retailers.

³⁵ For example Macquarie Generation (located in NSW) is excluded from providing ex-ante reallocation contracts to VIC retailers.

³⁶ Reallocation Information Paper and Examples, NEMMCO May 2004. p.5.

³⁷ See Corporations Act s 588: Uncommercial Transactions. Consider:

1. an insolvent retailer preferentially dealing with a related generator to the detriment of the retailer, via a NEMMCO ex-post reallocation transacted at an uncommercial rate; or
2. an insolvent generator entering into an uncommercial ex-ante reallocation with a related retailer (benefiting the retailer), to the detriment of the insolvent generator.

2.15 Futures Offsets reduce the incentive for reallocated NEM generators to deliberately trigger their own default/suspension to NEMMCO

The ex-ante reallocation arrangements may also create incentives for reallocated generators to deliberately trigger a default to NEMMCO in order to force NEMMCO to deregister a reallocation with a retailer under s3.15.21(i)(3), particularly if the forward term of the generator's reallocation swap contract with NEMMCO becomes substantially "out of the money" due to a forward market price movement. This incentive will increase substantially under NEMMCO's new formula-based reallocation procedures, where generators can short-sell a reallocation derivative on a contract for difference basis. In this situation, a forward contract price increase (or decrease) subsequent to the reallocation derivative deal date could create reallocation forward contract exposures of several hundred million dollars for a single NEM Participant³⁸.

The existing Rules provide the opportunity for NEM generators (or retailers) to deliberately trigger the deregistration of an "out of the money" NEMMCO reallocation derivative without having to pay compensation to NEMMCO or the opposing counterparty. The inability to recoup potentially enormous unrealised mark to market (i.e. contract replacement) value via the current Rules places the other reallocating counterparty at significant financial risk. Issues concerning the design of the NEMMCO reallocation market including an absence of daily mark to market valuation or margining by NEMMCO were detailed in the ASX submission to the NEMMCO Reallocation Rule change Request 2006³⁹. The futures contracts underpinning FOAs are marked to market daily and facilitated by SFE Clearing Participants, reducing the incentive and ability for NEM Participants to merely "opt out" of derivative payment obligations to other futures market participants.

2.16 Credit support in the event of low price outcomes – potential close out of retailer's futures

Major financial commitments of retailers arise from the requirement to pay NEMMCO for high priced spot market purchases. Retailers are unlikely to be under similar financial stress during periods of low spot prices. A retailer only has to make variation margin payments to its SFE Clearing Participant against purchased futures contracts if the value of the futures contracts falls. The collection risk arising from a retailer failing to make a futures variation payment created by falling futures prices is therefore smaller and rests with the retailer's SFE Clearing Participant.

Under the proposed rule to support FOAs, in the event that a retailer defaulted to its SFE Clearing Participant on a purchased futures position and the SFE Clearing Participant was forced to close out the retailer's futures position, the SFE Clearing Participant immediately notifies NEMMCO. The SFE Clearing Participant is obligated to make payment to NEMMCO of positive variation margins above the Futures Lodgement Price up until the termination date, and if the average price at which the futures contracts were closed out is below the Futures Lodgement Price (or at any time), NEMMCO has the ability to apply the preserved bank guarantee protection which is always retained under a FOA.

³⁸ E.g. consider a generator selling a 2,000 MW one year base load ex-ante reallocation swap contract to NEMMCO (with a retailer purchasing the other side of the reallocation swap contract). If the market price of equivalent 1 year derivatives moved by the same extent that the NSW base load Calendar year 2008 contracts rallied during the first half of 2007 (as evidenced by the official daily settlement prices on the SFE up until June 2007), the reallocated generator would owe approximately \$781 million in unrealised, unsecured forward obligations. i.e. NSW base load Calendar year 2008 contract prices rallied from \$39/MWh to \$83.50/MWh. $(\$83.50/\text{MWh} - \$39.00/\text{MWh}) \times 8,784 \text{ hours} \times 2,000 \text{ MW} = \781 million .

³⁹ See http://www.d-cyphatrade.com.au/newsroom/industry_news_2/foas to download the ASX submission to the AEMC.

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NEMMCO also retains the benefit of any FOA futures cash flows already received during the term of the FOA. If the futures close out price is above the previous highest settlement price during the term of the FOA, NEMMCO receives the additional value in cash. The preserved bank guarantee protection under a FOA provides an additional tier of default protection to NEMMCO during low pool prices, which is not available to the same extent under current ex-ante reallocation arrangements when a reallocated generator fails to dispatch and is unable to honour a reallocation commitment. If futures positions are closed out, they are closed out at an independent market consensus price (via the SFE futures market), rather than calculating credit support requirements using a backward looking formula-based price as relied upon by NEMMCO under the current MCL methodology. This ensures that a retailer's combined credit support to NEMMCO (including retained bank guarantees and accumulated futures cash receipts) at the time of a futures closeout is set at the best available market consensus view of future pool price risk, which limits (although does not completely eliminate) the risk to NEMMCO that the retailer cannot successfully re-lodge MCL bank guarantees to the old MCL price estimate *and* NEMMCO's MCL price estimate is both more accurate *and* higher than the futures market.

The improved risk coverage provided by futures compares favourably to the existing reallocation arrangements where NEMMCO may be forced to issue a spot market call notice to a retailer (risking non-payment) without the added benefit of support from both futures contracts and preserved bank guarantees (other than limited support from the prudential margin). Current ex-ante reallocation arrangements expose all generators to default risk during low pool prices⁴⁰ without the additional tiers of default protection provided by FOAs (see diagram 2).

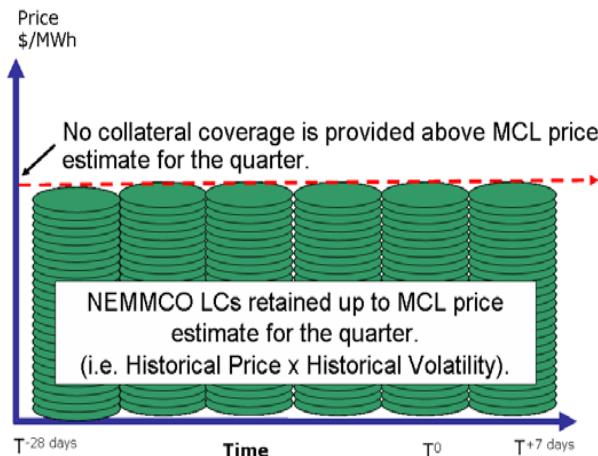
⁴⁰ E.g. due to the unforeseen outage (or deliberately triggered default) of a reallocated generator that has “short sold” a reallocation transaction via NEMMCO using *potential* future generation as collateral support.

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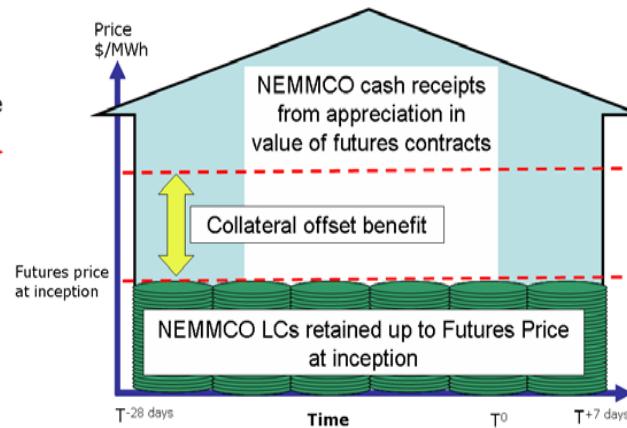
Diagram 2. Comparison of MCL credit support postings expressed in \$/MWh for the retailer's average expected energy consumption during the quarter:

1. Without Futures Offset or reallocation;
2. With proposed Futures Offset; and
3. With existing ex-ante reallocation

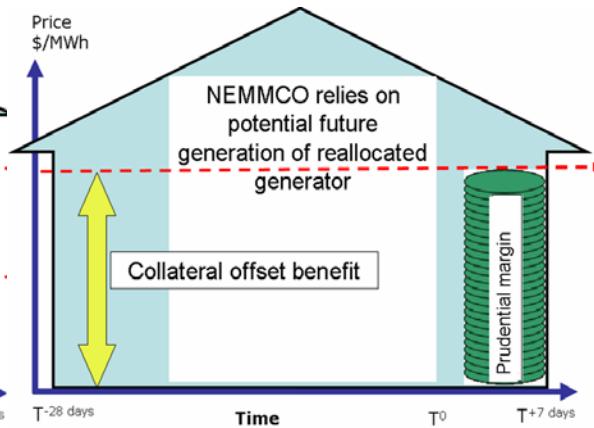
1. MCL without Futures Offset



2. MCL with Futures Offset



3. MCL with ex-ante reallocation



An important distinction between FOAs and ex-ante reallocations is that under FOAs, the retailer continues to maintain a level of bank guarantee support (denoted in the diagram as “NEMMCO LCs”) as per the suggested MCL formula, equivalent to the futures contract price (in \$/MWh) at inception of the arrangement. In most cases, this price is likely to be the most recent Official Daily Settlement Price of the relevant futures contract prior to registration of the FOA. Under a FOA, the retailer continues to make spot market settlement payments to NEMMCO as normal, while benefiting from a reduced MCL and reduced credit support costs. Futures cash flows received by NEMMCO may be applied to the retailer’s Security Deposit Arrangement or as otherwise agreed to by NEMMCO and the retailer (e.g. to meet a weekly NEMMCO settlement obligation).

2.17 Anonymity concerns of Market Participants are addressed by futures

Participants have raised concerns regarding anonymity in relation to the current reallocation framework.⁴¹ A distinguishing feature of exchange traded electricity derivatives is that the confidentiality of counterparty identity is protected. Proposed FOAs ensure that the identity of the seller (e.g. generator, bank, another retailer or hedge fund) is not revealed to the retailer or to NEMMCO. The retailer is not required to disclose the identity of its commercial counterparties⁴² as a result of a FOA although price and volume transparency benefits are immediately (or were previously) delivered to the wider market in real time when the futures contract is traded.

2.18 Retailers achieve credit support offset benefits without generator permission using futures

Under the proposed Rule changes to support FOAs, retailers (and their SFE Clearing Participant) may initiate a FOA with NEMMCO without requiring the permission of an incumbent base load generator. This addresses the current problem faced by retailers where generators refuse to enter into a reallocation agreement or charge exorbitantly to provide one. Futures sellers are indifferent as to whether a futures contract is ultimately submitted to NEMMCO by a retailer for the purpose of a FOA, and cannot impede such an application.

3 Other Competition based inefficiencies to be addressed by the Proposed Rules

3.1 Current barriers to entry avoided by futures

The current cost of providing credit support to NEMMCO is a significant barrier to NEM entry for new entrant retailers and Market Customers⁴³. Start-up retailers and Market Customers may not meet the balance sheet requirements to attract reasonably priced (or readily accessible) bank guarantee support from financial guarantee providers. This may also prevent these participants from being able to provide adequate OTC credit support to generators offering reallocation transactions. This problem is exacerbated because the trading arrangements required to access more than one potential reallocation seller (generator) often require separate, duplicate guarantees to be provided to several counterparties. This requirement magnifies the credit support inefficiency of the current reallocation arrangements in the absence of FOAs. All SFE futures market participants (supported by SFE Clearing Participants and mark to market margin efficiency) enjoy full and equal access to futures market liquidity with significantly lower credit support requirements (with associated cost reductions). Additionally, FOAs may automatically reduce the incidence and magnitude of spot market call notices on Retailers, reducing another significant barrier to entry.

3.2 Vertical Integration is encouraged (and rewarded) by reallocations – Futures Offset Arrangements address this issue

The current ex-ante reallocation Rules reward retailers for adopting anticompetitive vertically integrated strategies (owning both retail and generation businesses). Vertically integrated NEM retailers are commercially advantaged by current reallocations because they avoid many of the adverse barriers and costs to reallocation faced by independent retailers. Such barriers include:

1. The requirement for a generator's permission to enter into a reallocation; and

⁴¹ "Improvements to the prudential framework report", Code change Panel, NECA August 2003.

⁴² The retailer will not know the identity of the futures seller due to the anonymity of futures trading.

⁴³ Bank guarantee facilitation costs for some new entrant NEM retailers exceed official overnight cash rates.

2. Credit risk costs associated with OTC contracts that support reallocations with non-related entities.

These costs and barriers are eliminated or lessened where the retailer and the generator are related entities.

Vertically integrated generators can be expected to provide exclusive or preferential access to reallocations to their related NEM retailer in order to commercially disadvantage competing independent retailers. In the absence of FOAs, the incentives for vertical integration created by the existing Rules will:

1. Displace transparent hedge contract availability that would otherwise enable independent retailers and generators to better manage their market risk;
2. Practically exclude or limit independent and new entrant NEM retailers from access to competitively priced reallocation offsets; and
3. Undermine financial market transparency, creating long term risks to new investment in generation and transmission and compromise the security of supply in the NEM.

The electricity futures market provides open access and price transparency to all potential participants (both integrated and independent) and reduces the ability and incentive for vertically integrated retailers and generators to “shut down” the supply of financial derivatives in any state region.

3.3 Unnecessary discrimination against peaking generation technology

The current ex-ante reallocation framework relies primarily upon energy-committed reallocations and unnecessarily discourages the involvement of capacity-based peaking generation. Peaking generation capacity is critical to the security of supply in the NEM. Many operators of peaking plants (e.g. natural gas fired generators) have a much higher short run cost of production than competing base load generators. Peaking generators earn investment returns by dispatching during higher pool prices but with less predictability of run time than base load generators, which dispatch a much higher proportion of their capacity at most times. Base load generators may more confidently commit to reallocation transactions knowing that their plant is likely to be running at the designated time (subject to unforeseen outages). Peaking plants are less able to participate in reallocation arrangements because peaking plant operators cannot be assured that it will be economical to dispatch the plant at a specific time in the future to meet a reallocation obligation.

Operators of peaking plants are, however, regularly prepared to hedge a significant proportion of their available installed capacity for all periods through the mainstream derivatives markets (including the futures market). Unless NEMMCO recognises electricity futures contracts for credit support offset purposes, peaking plants will be (practically) prevented from contributing to the supply of NEMMCO prudential offsets via the futures market. Unequal treatment of NEM participants according to generation technology⁴⁴ threatens to deter critical future investment in peaking capacity.

⁴⁴ In contrast to s 3.1.4 of the National Electricity Rules.

4 Summary of issues concerning the existing Rules that will be addressed by Futures Offset Arrangements

As discussed, in the absence of FOAs, the current reallocation mechanism, characterised by the drawbacks identified above, creates for Market Participants, NEMMCO and the NEM:

1. incentives for a regionalised market structure segregated by state boundaries;
2. a reduction in financial market transparency and liquidity, which compromises price discovery, and quality of investment decision making;
3. barriers to entry for new entrant retailers, reducing competition benefits for consumers and reducing customer choice and service innovation;
4. preferential treatment of base load generation technology and disincentive for environmentally sustainable peak load generation;
5. a crowding out effect on more efficient (national and international based) financial markets which are providing important risk mitigation and price discovery support; and
6. incentives for anticompetitive vertical integration, encouraging retailers to purchase previously independent generators in their region as a response to a likely deterioration in hedge market liquidity and to avoid credit risks and costs created by reallocations with independent generators.

Several of these outcomes actively work against key energy market objectives cited by the Coalition of Australian Governments (COAG) regarding transparent and efficient financial markets for energy⁴⁵ and the following Market Design Principles enshrined in the National Electricity Rules⁴⁶:

1. minimisation of NEMMCO decision-making to allow Market Participants the greatest amount of commercial freedom to decide how they will operate in the market;
2. maximum level of market transparency in the interests of achieving a very high degree of market efficiency;
3. avoidance of any special treatment in respect of different technologies used by Market Participants;
4. equal access to the market for existing and prospective Market Participants;

⁴⁵ Communiqué of the 17th Meeting of COAG (Energy), 10 February 2006.

⁴⁶ National Electricity Rules s 3.1.4

Appendix 7. Draft of the proposed Rule change

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n.b. specific draft amendments to existing Rules are underlined

NB. 3.3.8 amended to:

Introduce Futures Offset Arrangements (FOAs), and other Market Participant transactions (s 3.3.19) for inclusion in the determination of the Maximum Credit Limit (MCL) of NEM Participants; and

Ensure that maximum Futures Offset benefits for Market Participants are achieved by aligning NEMMCO's MCL price prediction term with the electricity futures product term (calendar quarters ending March, June, September and December), as it has been previously.

3.3.8 Maximum credit limit and prudential margin (amended)

- (a) *NEMMCO must determine for each Market Participant a maximum credit limit and prudential margin.*
- (b) *The maximum credit limit for a Market Participant is a dollar amount determined by NEMMCO applying the principles set out in schedule 3.3, being an amount determined by NEMMCO on the basis of a reasonable worst case estimate of the aggregate payments for trading amounts (after reallocation and Futures Offset Arrangements) to be made by the Market Participant to NEMMCO over a period of up to the credit period applicable to that Market Participant.*
- (c) *The prudential margin for a Market Participant is a dollar amount to be determined by NEMMCO applying the principles set out in schedule 3.3, being amount determined by NEMMCO on the basis of a reasonable worst case estimate of the aggregate of the expected trading amount and the reallocation amount owing by the Market Participant to NEMMCO in respect of the reaction period.*
- (d) *NEMMCO must publish details of the methodology used in determining maximum credit limits and prudential margins.*

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(e) NEMMCO shall review the *maximum credit limit* and *prudential margin* of each *Market Participant* not less than once each year.

(f) NEMMCO shall ensure that the methodology used in determining maximum credit limits and prudential margins ensures the maximum possible alignment to the term of electricity futures contracts being calendar quarters ending March, June, September and December to maximise the benefits of Futures Offset Arrangements for Market Participants.

(g) NEMMCO may change either or both of the *maximum credit limit* or *prudential margin* for a *Market Participant* at any time (whether by reason of an annual review or otherwise), provided that any change to the *maximum credit limit* or *prudential margin* will apply with effect from such time (not being earlier than the time of notification of the changed *maximum credit limit* or *prudential margin*, as the case may be, to the *Market Participant*) as NEMMCO specifies.

(h) NEMMCO must notify the *Market Participant* of any determination or change under this clause 3.3.8 of that *Market Participant's maximum credit limit* or *prudential margin* (as the case may be) and, on request from that *Market Participant*, provide details of the basis for that determination or change, **including the trading, price, volatility, registered Futures Offset Arrangements and prospective reallocation assumptions and the average spot prices and ancillary service prices and average trading amounts.**

3.3.9 Amended to enable cash flow obligations arising from FOAs which are payable to NEMMCO from SFE Clearing Participants but which have not yet been paid to be included in the Outstandings formula **(to minimise unnecessary NEMMCO Margin Calls on Market Participants)**

3.3.9 Outstandings (amended)

At any time the *outstandings* of a *Market Participant* is the dollar amount determined

by the formula:

$$\text{OS} = - (A + B + SDA)$$

where:

OS is the amount of the *outstandings* of the *Market Participant*;

A is the aggregate of the net *settlement amounts* payable in respect of *billing periods* prior to the current *billing period* which remain unpaid by, or to, the *Market Participant* whether or not the *payment date* has yet been reached;

B is the net *settlement amount* payable by, or to, the *Market Participant* in respect of *transactions* for *trading intervals* that have already occurred in the current *billing period*; and

SDA is the balance (if any) of the Market Participant in the security deposit fund which includes monies owed by a SFE Clearing Participant under a Futures Offset Arrangement in accordance with s 3.3.15.11B, which have not yet been paid to NEMMCO, in which case a credit balance will be a positive amount and a debit balance will be a negative amount.

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The amounts to be used in this calculation will be the actual *settlement amounts* for *billing periods* where *final statements* have been issued by *NEMMCO* or *NEMMCO's reasonable estimate* of the *settlement amounts* for *billing periods* (where *final statements* have not been issued by *NEMMCO*).

Note: Where the value of *outstandings* of a *Market Participant* is a negative amount the absolute value of the *outstandings* amount will, for the purposes of clause 3.3, be treated as if it were an amount payable by *NEMMCO* to the *Market Participant*.

NB: 3.3.13 amended to enable participants to lodge a Notice of Futures Offset Arrangement to meet Call Notices in a similar way in which NEMMCO reallocations may be applied for that purpose.

3.3.13 Response to Call Notices (amended)

- (a) Subject to clause 3.3.13(b), where *NEMMCO* has given a *call notice* to a *Market Participant*, the *Market Participant* must before 11.00 am (*Sydney time*) on the next *business day* following the issue of the *call notice* either:
- (1) agree with *NEMMCO* to an increase in the *Market Participant's maximum credit limit* by an amount not less than the *call amount*, and provide to *NEMMCO* additional *credit support* where, by virtue of the increase in the *maximum credit limit*, the *Market Participant* no longer complies with its obligations under clause 3.3.5;
 - (2) (where clause 3.3.13(a)(1) is not satisfied) pay to *NEMMCO* in cleared funds a security deposit of an amount not less than the *call amount*;
 - (3) lodge a *reallocation request* *or Notice of a Futures Offset Arrangement which would give rise to a reduction in the Outstandings of the Market Participant* of an amount which is not less than the *call amount* and which is accepted by *NEMMCO*; or
 - (4) provide to *NEMMCO* any combination of clauses 3.3.13(a)(1), (2) and
- (3) such that the aggregate of the amount which can be drawn under the additional *credit support* provided and the amount of the security deposit paid and the amount of the *reallocation request* *or Notice of Futures Offset Arrangement* accepted by *NEMMCO* is not less than the *call amount*.
- (b) If *NEMMCO* gives a *call notice* to a *Market Participant* after noon (*Sydney time*), then *NEMMCO* is deemed to have given that *call notice* on the next *business day* for the purposes of this clause.

NB. 3.3.19 deleted because:

Clause will become redundant when the Futures Offset Arrangements Rule change is approved. Market Participant transactions facilitated by other licensed operators of Australian Financial Markets for electricity and licensed Clearing and Settlement Facilities (if and when they exist) should be included/rejected via a formal Rule change proposal. This will enable due process in the inclusion or exclusion of other market operators to avoid the inclusion of unlicensed or illegal derivative markets (under Corporations Law).

3.3.19 Consideration of other Market Participant transactions (deleted)

NB: 3.15.1 amended to include the facilitation of FOAs in billing and payments facilitation provided by NEMMCO.

3.15.1 Settlements management by NEMMCO (amended)

(a) *NEMMCO* must facilitate the billing and settlement of payments due in respect of *transactions and Futures Offset Arrangements* under this Chapter 3, including:

- (1) *spot market transactions*;
- (2) *reallocation transactions*;
- (3) *Futures Offset Arrangements*; and
- (4) ancillary services transactions under clause 3.15.6A.

NB: New section 3.15.11B to define FOAs. S 1 defines entities which may facilitate FOAs, to require appropriate regulatory oversight of such entities and compliance with the relevant Corporations Law governing derivatives markets.

3.15.11B Futures Offset Arrangements (new)

1. Facilitators of Futures Offset Arrangements

A Futures Offset Arrangement is an arrangement whereby a Clearing Participant of a licensed **Clearing and Settlement Facility** as defined in the relevant Australian Corporations Legislation agrees on behalf of a Market Participant to facilitate the cash payment to NEMMCO of amounts equivalent to electricity futures variation margins occurring above a prescribed futures contract price in relation to electricity futures contracts that have been specified to be subject to the arrangement.

NB: S 2 provides the required specifications of a Notice of Futures Offset Arrangement to be made to NEMMCO. Examples of Notices of Futures Offset Arrangements are provided in appendix 3 of this Rule change proposal.

2. Notice of Futures Offset Arrangement

In order to be valid, a Notice of Futures Offset Arrangement must be lodged with NEMMCO by or on behalf of a *Market Participant* and a Clearing Participant and include:

2.1 The term of the Futures Offset Arrangement, including:

- a. The Starting Day being the first day on which a Futures Offset Arrangement is to commence effect;
- b. The Termination Day being the last day that a Futures Offset Arrangement is to be in effect;

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- 2.2 Specification of the futures contracts nominated to become subject to the Futures Offset Arrangement including:
- a. The futures contract Region;
 - b. The futures product code as referenced by the relevant exchange;
 - c. The futures contract term (specifying the time and date of the first half hour interval of energy and the time and date of the last half hour interval of energy encompassed by the term of the futures contract);
 - d. The quantity of futures contracts;
 - e. The MWhs incorporated in one futures contract;
 - f. The futures contract cash settlement day;
 - g. The futures contract load shape (being either Base or Peak); and
 - h. The Futures Lodgement Price

2.3 Notification from the Clearing Participant and the *Market Participant* to NEMMCO that the Clearing Participant and the *Market Participant* agree to be bound by the terms and conditions of Futures Offset Arrangements as specified in this s 3.15.11B.

NB: S 3 details registration of FOAs by NEMMCO

3. Registration of Futures Offset Arrangements

- 3.1 NEMMCO will register a Futures Offset Arrangement within 1 hour of receipt of a valid Notice of Futures Offset Arrangement where such Notice is received between 9 am to 4 pm on a business day. NEMMCO will register a Futures Offset Arrangement by 9 am on the business day following the receipt of a valid notice of Futures Offset Arrangement where such notice is received at any time other than between 9 am to 4 pm on a business day. NEMMCO will immediately inform the *Market Participant* and the Clearing Participant of such registration.
- 3.2 NEMMCO will nominate an Austraclear account to the Clearing Participant for the purpose of NEMMCO receiving payments arising from the Futures Offset Arrangement.

NB: S 5 defines the formula for the calculation of cash flows arising from positive movements in the value of relevant futures contracts (above the futures lodgement price) to be paid to NEMMCO by the Clearing Participant. Cash flows will be calculated on Calculation Days (defined) being futures exchange business days. The formula accommodates four types of calculation days being either the Starting Day of the Futures Offset Arrangement, subsequent calculation days, calculation days occurring on a termination day or calculation days occurring on a close out of futures positions.

NEMMCO receives cash flow amounts equivalent to the positive moves in the relevant futures contracts to the extent that such moves occur above the Futures Lodgement Price and the value of the futures

contracts is higher than the previous highest value of the futures contracts during the term of the Futures Offset Arrangement. NEMMCO will never be obligated to make a payment under the arrangement. If NEMMCO has received (or is due) payment arising from an increase in futures contract value and then, on a subsequent calculation day(s), the futures contract value reduces there is no obligation for NEMMCO to return funds under the arrangement. See worked cash flow examples and diagrams in Appendix 4.

5. Calculation of payment to NEMMCO of futures variation margins above the Futures Lodgement Price.

5.1 The Clearing Participant will make payment to NEMMCO amounts calculated on Calculation Days being business days of the relevant exchange that occur during the term of the Futures Offset Agreement in relation to futures contracts which are the subject of a Futures Offset Arrangement equivalent to:

$$\text{Max } [(DSP_t - \text{Max } [DSP_{t-1}, FLP, DSP_h]) \times FQ, 0]$$

Where, subject to s 5.2:

FLP = the Futures Lodgement Price;

DSP_h = the previous highest official daily settlement price that has occurred during the term of the Futures Offset Arrangement;

FQ = the quantity of Futures Contracts multiplied by the MWhs incorporated in each Futures Contract; and

5.1.1 For the first Calculation Day of a Futures Offset Arrangement:

DSP_t = the official daily settlement price as at close of business on the Starting Day (unless the Starting Day is not a business day of the relevant exchange, in which case DSP_t = the official daily settlement price as at close of business on the next business day of the relevant exchange); and

DSP_{t-1} = FLP;

5.1.2 For a Calculation Day that occurs after the first Calculation Day but excludes any day after the last trading day of the relevant futures contract:

DSP_t = the official daily settlement price as at close of business on the Calculation Day.

DSP_{t-1} = the most recent official daily settlement price prior to DSP_t

5.1.3 Where the Termination Day occurs after the last trading day of the relevant futures contract only one Calculation Day will occur after the last trading day of the relevant futures contract. That Calculation Day will occur on the cash settlement day of the relevant futures contract. For a Calculation Day that occurs on the cash settlement day of the relevant futures contract:

DSP_t = the official cash settlement price of the relevant futures contract.

DSP_{t-1} = the official daily settlement price as at close of business on the last exchange trading day of the relevant futures contract.

- 5.1.4 In relation to a close out of futures contracts which are the subject of a Futures Offset Arrangement on any Calculation Day on or after the Starting Day:

DSP_t = the volume weighted average price at which the relevant futures contracts were closed out on the date of close out. The Clearing Participant will provide NEMMCO with notification of the price and volume of each futures contract that is closed out no later than 11 am on the next Business Day of the relevant exchange following the date of the close out.

DSP_{t-1} = the most recent official daily settlement price prior to the date of close out unless the close out occurs on the Starting Day in which case $DSP_{t-1} = FLP$.

NB: S 6 defines form and timing of payments to NEMMCO

6. Form and Timing of payments to NEMMCO arising from Futures Offset Arrangements.

The Clearing Participant will make cash payment to an Austraclear account nominated by NEMMCO no later than 11 am on the next Business Day of the relevant exchange following the relevant Calculation Day on which a payment obligation arises. NEMMCO will accept such payments.

7. Clearing Participant to provide daily Futures clearing statement to NEMMCO.

The Clearing Participant will provide NEMMCO with a daily clearing statement detailing the volume and official daily settlement price of futures contracts which are the subject of Futures Offset Arrangements by 11 am on the exchange business day following the exchange business day to which the official daily settlement price relates.

NB: S 8 requires NEMMCO to deposit payments received from Clearing Participant into the Security Deposit account of the Market Participant unless otherwise agreed between NEMMCO and Market participant.

8. Application of monies received by NEMMCO from Futures Offset Arrangements.

NEMMCO will credit the Security Deposit of the *Market Participant* with an amount equivalent to monies received from the Clearing Participant, unless otherwise agreed to by NEMMCO and the Market Participant. Unless otherwise agreed to by NEMMCO, the *Market Participant* must retain an amount (in cash or other approved security) in the Market Participant's Security Deposit of no less than the cumulative monies received from the Clearing Participant during the term of the Futures Offset Arrangement until the 4th business day after the end of the associated Futures quarter or until the Futures Offset Arrangement has been terminated in accordance with s 9.

NB: S 9 defines the notification procedure and obligations for early termination of FOAs by the Clearing Participant or by NEMMCO.

9. Termination of Futures Offset Arrangements

9.1 A Futures Offset Arrangement may be wholly or partially terminated on a date earlier than that specified on the Notice of Futures Offset Arrangement, by notification to NEMMCO and the *Market Participant* from the Clearing Participant specifying:

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- a) a new termination day being the last day that the Futures Offset Arrangement will occur and not being earlier than the date of such notification to NEMMCO; and
- b) the number of futures contracts which will be subject to the new termination day.

9.2 In the event of a close out of futures contracts that are subject to a Futures Offset Arrangement, the Clearing Participant will:

- a) notify NEMMCO and the *Market Participant* of the termination of the Futures Offset Arrangement in relation to the futures contracts that have been closed out, specifying a new termination day for the Futures Offset Arrangement, being the day that notice is given; and
- b) make such payments to NEMMCO as required under clause 3.15.11B 5.2.

9.3 If a *default event* occurs in relation to the *Market Participant* which is a party to a Futures Offset Arrangement prior to the Termination Day of a Futures Offset Arrangement, *NEMMCO* may terminate the Futures Offset Arrangement by notice given to the Clearing Participant and the *Market Participant* at any time whilst the *default event* is subsisting. The termination is effective forthwith upon *NEMMCO* notifying the *Market Participant* and the Clearing Participant that lodged the Notice of Futures Offset Arrangement of the fact of termination, notwithstanding that the *default event* may be subsequently cured. The obligation for the Clearing Participant to make payments to *NEMMCO* in accordance with this section 3.15.11B will cease upon payment by the Clearing Participant to *NEMMCO* of all amounts owing in relation to Calculation Days which predate the time of notification of termination of the Futures Offset Arrangement by *NEMMCO*.

9.4 In addition to any other right which *NEMMCO* may exercise in relation to a *default event*, upon termination of a Futures Offset Arrangement *NEMMCO* may redetermine the *maximum credit limit, prudential factor* and *trading limit* for the *Market Participant* which lodged the Notice of Futures Offset Arrangement having regard to the termination which has occurred.

NB: Amendments to S 3.3.1 and S 3.3.2 to:

1. Introduce the consideration of FOAs within the Principles for Determination of Market Participant's MCL;
2. Define the calculation of the amount of MCL reduction created by FOAs. The MCL reduction is commensurate with the quantity, term and Lodgement Price of the relevant futures contracts in comparison to the volatility adjusted price assumption used by *NEMMCO* to calculate the MCL, before reallocations and FOAs⁴⁷;
3. Determine the average level of prices for MCL calculation purposes using the relevant electricity futures price as a forward looking "market consensus" view, rather than using the current backward looking price assumption which relies entirely only historical price averages; and

⁴⁷ For a worked example of a calculation of the reduction in MCL as a result of FOA see Appendix 5 of the Rule change Request.

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| 4. Reduce the prudential factor calculation to zero for FOAs to reflect that under FOAs residual MCL bank guarantees are maintained up to the level of the Futures Lodgement Price (i.e unlike the currently approved NEMMCO ex-ante reallocations with an effective \$0.00/MWh fixed price). |
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Schedule 3.3 - Principles for Determination of Maximum Credit Limits & Prudential Margins (amended)

This schedule sets out the principles to be followed by *NEMMCO* in determining the *maximum credit limit* and *prudential margin* for a *Market Participant*.

S3.3.1 Principles for determining maximum credit limits

- (a) The *maximum credit limit* should be set on the principle of imposing a guarantee of payment being made to *NEMMCO* to a level of a *reasonable worst case*.
- (b) When calculating the *maximum credit limit* *NEMMCO* should have regard to:
- (1) impartial objectivity rather than subjectivity, though it is recognised that some key parameters will need to be subjectively estimated from a limited amount of data - the estimation should be as impartial as possible;
 - (2) the average level and volatility of the *regional reference price* for the *region* for which the *maximum credit limit* is being calculated, *measured with reference to the most relevant SFE Electricity futures contract price* comparable to the frequency of breaches of the *maximum credit limit*;
 - (3) the pattern of the quantity of electricity recorded in the *metering data* for the *Market Participant*;
 - (4) the quantity and pattern of the *prospective reallocation* in the immediate future;
 - (5) the correlation between the metered amounts of electricity and the *regional reference price*;
 - (6) the length of the *credit period*, which is the number of days from the start of a *billing period* to the end of the *reaction period* taking into account:
 - (i) the length of the *billing period*;
 - (ii) the typical time from the end of the *billing period* to the day on which *settlement* for that *billing period* is due to be paid (the *payment period*);
 - (iii) any current written request from the *Market Participant* to *NEMMCO* for the *maximum credit limit* to be determined on a *payment period* taken, for the purposes of clause 3.3.8 and not otherwise, to be 14 days; and
 - (iv) the time from a *default event* to the suspension or other removal of the *defaulting Market Participant* from the *market*, being a period of up to 7 days (the *reaction period*);
 - (7) the statistical distribution of accrued amounts that may be owed to *NEMMCO*; and
 - (8) the degree of confidence that the *maximum credit limit* will be large enough to meet large defaults (i.e. the degree of reasonableness in a *reasonable worst case*).

(c) As far as practicable, this schedule 3.3 must be read and construed as taking into account *market ancillary service transactions* for the calculation of the *maximum credit limit* for the relevant *Market Participant*.

- (9) *the quantity of Futures Offset Arrangements involving futures contracts with contract terms that include the immediate future. Futures Offset Arrangements will give rise to a reduction in maximum credit limit for the Market Participant that is a party to a Futures Offset Arrangement commensurate with the quantity and the term of the futures contracts which are the subject of a Futures Offset Arrangement and the difference between:*

- (i) *The expected worst case volatility-adjusted price outcome assumed by NEMMCO for maximum credit limit calculation purposes in accordance with this section 3.3.1; and*
- (ii) *The Futures Lodgement Price of the Futures Offset Arrangement;*

such that the reduction in maximum credit limit as a result of a Futures Offset Arrangement will be calculated using the following methodology:

Max [(PR x VFR – FLP) x FLR x T, 0]

Where for each Futures Offset Arrangement:

FLP represents the futures lodgement price covering each Market Region R;

FLR represents the associated average daily energy of Futures Offset Arrangements for the Market Participant where the offset is to be calculated with reference to the spot electricity price of Region R.

PR represents NEMMCO's estimate of the average future pool price for each Market Region R;

VFR is a volatility factor, which ensures that the maximum credit limit is not exceeded more than once in 48 months;

T is the number of days assumed in NEMMCO's maximum credit limit credit period which coincide with days in the term of the futures contracts which are the subject of the Futures Offset Arrangement.

S3.3.2 Principles for determining prudential margins

The value of the *prudential margin* for a *Market Participant* is set on the same principles as the *maximum credit limit* except that:

- (1) if the aggregate of all *trading amounts* for the *Market Participant* is a positive amount the quantity and pattern of those *trading amounts* are not taken into account when determining the *prudential margin*;
 - (2) if the aggregate of all *reallocation amounts* for the *Market Participant* is a positive amount the quantity and pattern of those *reallocation amounts* are not taken into account when determining the *prudential margin*;
- (3) the prudential margin will be zero to the extent that the quantity and term of Market Participant Futures Offset Arrangements coincide with the credit period;* and

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(4) the *prudential margin* is calculated in respect of the *reaction period*.