



Submission to AEMC on NEM Financial Market Resilience

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1. Introduction

The AEMC Issues Paper on NEM Financial Market Resilience provides an informative high level overview of numerous potential systemic default risk scenarios that threaten the stability of the Australian OTC electricity market and the NEM spot market¹. d-cyphaTrade appreciates the opportunity to draw the AEMC's attention to additional risk issues not covered in the Issues Paper and to challenge the AEMC's initial view that:

- a. "...the financial relationships and markets that underpin the efficient operation of the NEM are generally robust"; and
- b. "...there is low likelihood of an unexpected event or series of events in the NEM causing financial contagion".

The AEMC's initial view conflicts with its own risk analysis in the Issues Paper and is also contrary to the consensus understanding of financial regulators and policy setters of the G20 nations regarding OTC derivative credit risk.

In the absence of daily margining and initial margins, the internal OTC credit risk management techniques explained in the Issues Paper (pp.26, 28) are all recognised by G20 financial regulators to be inadequate. The same OTC credit default risk management techniques adopted by highly sophisticated and higher-credit worthy banks were grossly ineffective during the market volatility and OTC credit defaults of the GFC, forcing tax payer funded bailouts of bank and non-bank OTC trading entities. The inadequacy of such OTC risk management arrangements is precisely why Australia and the other G20 nations have committed to reforming OTC markets, insisting instead on (i) central clearing, (ii) daily margining and (iii) exchange trading of all standardised OTC derivatives. Please refer to appendix 1 for an excerpt from the CFTC explaining why the G20 OTC reforms are necessary to control the otherwise uncontrollable credit default risks inherent in uncleared OTC swap markets.

Credit default risks and interdependencies between participants in Australia's multi-billion dollar OTC electricity market are considerable and a contagion default event could be triggered from any one of numerous potential events. **However these risks can be quarantined and substantially eliminated through Australia's implementation of its G20 commitments to OTC market reform, avoiding the need for future government bailouts of "too big to let fail" electricity companies.**

¹ For additional analysis of economic efficiency gains for the NEM arising from regulatory reform of OTC electricity derivative trading, refer also to d-cyphaTrade's submission to Central Clearing of Over-the-counter (OTC) Derivatives in Australia, 1 September 2011. <http://www.rba.gov.au/payments-system/clearing-settlement/submissions-received/central-clearing-otc/pdf/d-cypha.pdf>

2. OTC Electricity market no longer artificially protected by Government ownership

The absence of a major credit default event in the Australian electricity financial systems to date should not lull Australian regulators into a false sense of security. The Australian OTC and spot electricity financial systems have been artificially supported until recently by government ownership, effectively providing an implicit taxpayer funded "OTC credit sleeve" for non-government counterparties. Until recently, the majority of electricity generation and many of the electricity retailers issuing OTC electricity derivatives had been government owned. Ongoing privatisation of energy trading businesses is removing government financial support from both the OTC derivative and NEM spot markets. The reported \$600 million OTC electricity hedge losses² of NSW government owned Pacific Power might have triggered a default event had it not been a government owned business. The June 2007 RoLR event and separate extremely large credit support posting to AEMO from NSW retailers due to high pool prices, may have triggered significant instability of the electricity financial systems had the suspended retailer had more customers than Energy One or the RoLR retailers affected not been owned by the NSW government and capable of calling on NSW T-Corp (rather than banks) to meet their emergency collateral requirements. Historically, the financial shocks caused by periods of volatile and prolonged forward market rallies (and counterparty credit exposures) have been largely absorbed by government involvement in the OTC derivatives market and AEMO spot market. This **tax payer protection of the OTC electricity market can no longer be relied upon, due to the privatisation of government owned electricity businesses.**

3. Need for AEMO to implement Futures Offset Arrangements (FOAs) as a G20-compliant alternative to ex ante reallocations.

AEMO ex ante reallocations and proposed Swaps and Options reallocations do not conform to Australia's G20 OTC reform commitments. Alternatively, Futures Offset Arrangements (FOAs) as recommended by the AEMC in July 2010³ would (if implemented by AEMO) provide a much more G20-compliant mechanism as they involve daily margining and are supported by an underpinning centrally cleared, transparent futures contract.

The AEMC Issues Paper p.47 summarised how NEM retailers with in-the-money hedge contracts may have a commercial option and strong incentive to deliberately become suspended from the NEM under certain financial conditions (e.g. during a period of prolonged high pool prices and a deeply in the money hedge contract position). Similarly, under a reallocation, a reallocated generator can have a strong commercial incentive and commercial option to deliberately force AEMO into terminating a reallocation at short notice, which places extreme financial stress on the reallocated retailer. For example, the owner of a generator with negative equity may be incentivised to not honour its sold Swap reallocation commitment to AEMO if the swap becomes materially out-of-the-money on a forward mark-to-market basis.

² See Pacific Power (Dissolution) Bill, Second Reading, 20 June 2003.
<http://www.parliament.nsw.gov.au/prod/parliament/hansart.nsf/V3Key/LA20030620004>

³ AEMC Market Review: Review into the Role of Hedging Contracts in the Existing NEM Prudential Framework, 27 July 2010.

Due to the absence of daily margining, rather than eliminating credit default risk ex ante reallocations merely transfer credit default risk from AEMO directly onto a generator. This necessitates another large offsetting OTC derivative exposure (effectively a \$0/MWh electricity swap) between the generator and the retailer to compensate the generator for the cost of its ex ante reallocation commitment to AEMO.

In contrast, the daily mark-to-market margining from the retailer to an AEMO security deposit involved in proposed FOAs drastically reduces such adverse incentives and risks in comparison to reallocation arrangements. Ironically, currently utilised ex ante reallocations and proposed Swap and Option reallocation (if implemented) create a strong commercial incentive (i.e. AEMO credit support rebates) for electricity retailers to not use centrally cleared exchange traded markets. This undermines liquidity on the licensed, transparent futures market in direct contravention of Australia's G20 commitments on OTC reform.

Diagram 1. Consistency with Australia's G20 OTC reform commitments.



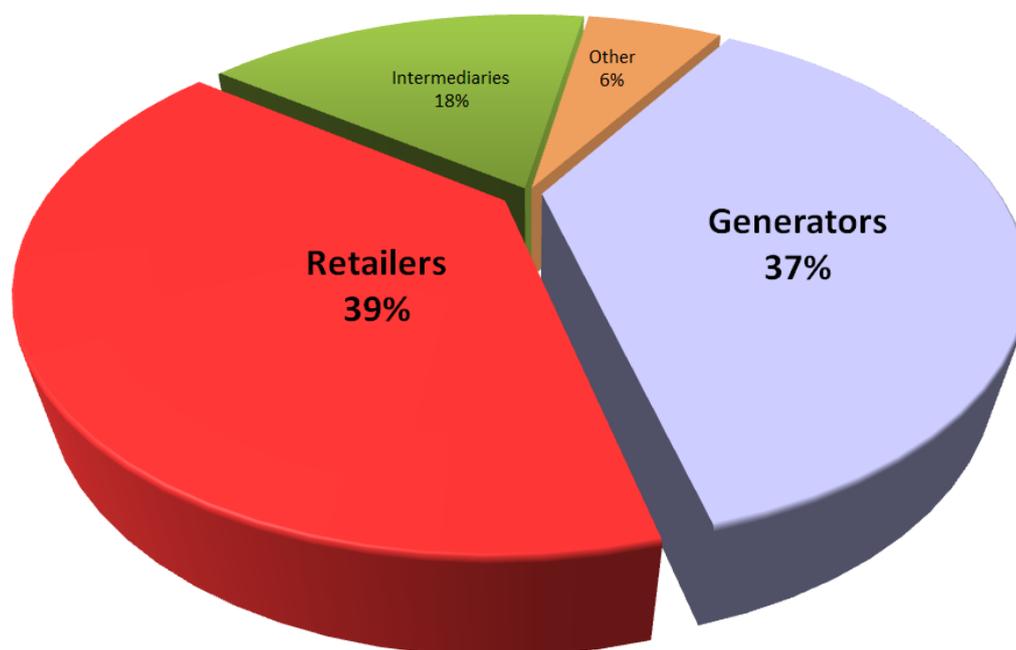
4. Size and concentration of OTC electricity credit default risk.

OTC credit default exposures in the Australian electricity market can be extremely large. Based on audited financial statements of listed Australian electricity retailers the net fair value of the electricity derivative portfolio of a single non-bank OTC electricity issuer has reached approximately \$4 billion⁴. The substantial concentration risk, inter-dependency between counterparties and size of exposures between non-bank OTC issuers in the electricity OTC market, can be approximated from survey data provided in the AFMA Australian Financial Markets Report 2011. Unlike other OTC markets which are dominated by creditworthy banks that are subject to a high degree of financial regulations, the AFMA data suggests that at least **76% of OTC electricity volumes were issued instead by electricity generators and retailers, not banks, and therefore by counterparties who are not subject to OTC-related collateral support requirements such as those to be applied to banks under**

⁴ AGL Annual Report 2007. p.89. Comprising electricity derivative assets of \$6.16 billion and liabilities of \$2.2 billion.

Basel III. The AFMA data also indicates an extremely high degree of OTC counterparty concentration. I.e. according to the AFMA data, **three counterparties were collectively responsible for issuing 64.5% of OTC electricity derivatives** during FY2011.⁵

Diagram 2. Segmentation of OTC electricity derivatives by issuer type.



Data source: AFMA Australian Financial Markets Report 2011

5. Non-standard OTC derivatives

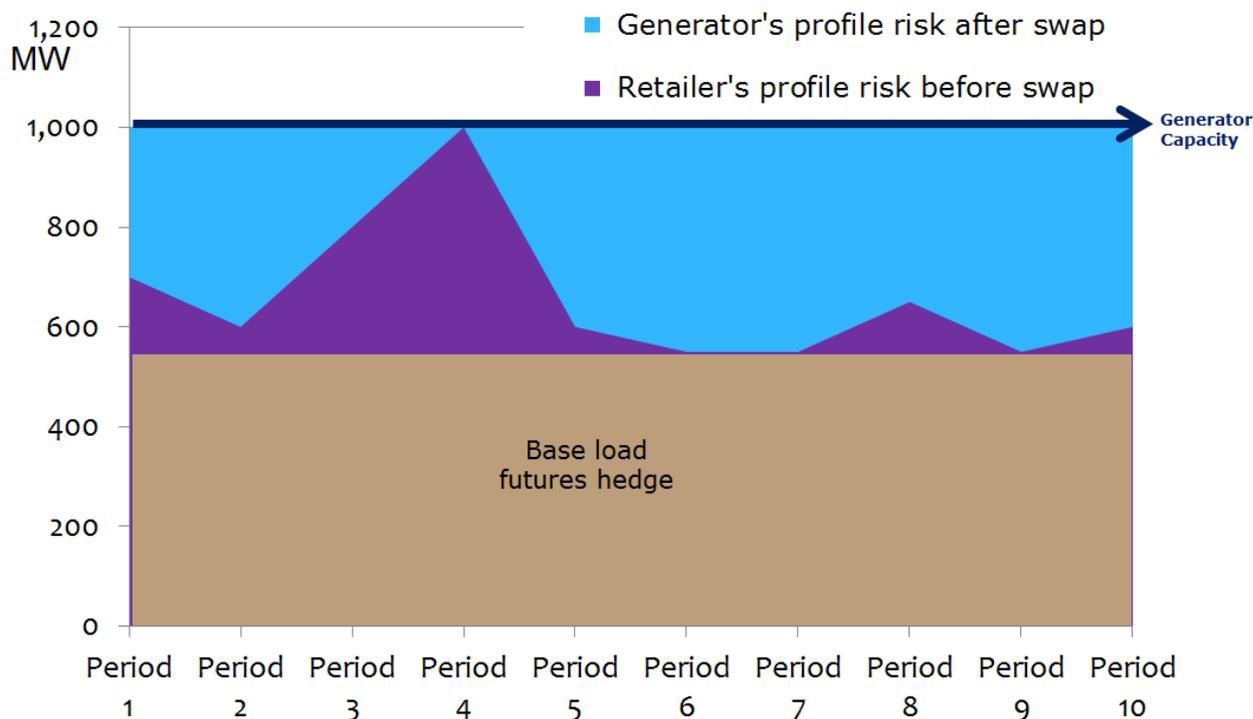
The G20 OTC reforms do not envisage banning trading in non-cleared OTC derivatives but merely that such derivatives should require commensurate collateral support between systemically-important non-financial entities, to reduce their risk.

Prudentially regulated bank intermediaries are as equally well placed as unregulated energy companies to facilitate non-standard OTC hedges for retailers and generators. In other financial markets, such intermediaries typically manage their client-related OTC positions using standardised centrally cleared products or non-standard products issued by other regulated financial intermediaries. There is no symbiotic efficiency or exact counterbalance between the non-standard component of a retailer's pool risk and that of a generator. For example, a sculptured load swap sought by a retailer may suit the marginal load profile of the retailer, but does not suit the unhedged pool market volume exposure of a generator – which effectively has base load capacity availability. A generator's volume availability does not increase during the same hours that a retailer's short volume risk exposure increases. In effect by selling a sculptured load swap covering increased volume during high demand, typically higher priced periods to a retailer, a generator inherits a non-standard profile risk on behalf of the retailer. All else being equal, the generator is left long (i.e. with idle unhedged capacity) across

⁵ "AFMA Australian Financial Markets Report 2011", Australian Financial Markets Association, 2011. p.52.

the low demand (typically low priced) hours of its base load availability, incurring a lower commercial return during those periods.

Diagram 3. Asymmetrical “non-standard” hedge requirements of generators and retailers



Similarly retailers are not liable to pay the carbon tax, so by purchasing a “carbon-pass-through” OTC electricity swap, a retailer *effectively* agrees to pay the generator’s carbon tax liability, creating a new financial risk and additional cost for the retailer rather than hedging an existing risk of the retailer.

This asymmetry of hedge requirements between retailers and generators means that bank intermediaries are at least as well suited as electricity companies to provide non-standard derivative hedges to utility companies, albeit with much lower default risk due to regulatory requirements on banks including the incoming Basel III collateral obligations for OTC counterparty exposures. Adoption of the G20 commitments on non-standard OTC derivatives would level the playing field by reducing the incentive for generators and retailers to issue unmargined OTC derivatives to each other rather than seeking a lower risk bank issued hedge product.

The lack of liquidity, increased price volatility, lack of daily margining and difficulty in reversing out of non-standardised swaps create significant risk which is why US regulators have committed to ensuring that non-standardised OTC swaps will be subject to at least the same level of initial margins and mark-to-market variation margining as centrally cleared, exchange traded derivatives.⁶

The other intention of the G20 commitment that non-cleared swaps attract a commensurate level of margining is to:

⁶ COMMODITY FUTURES TRADING COMMISSION, 17 CFR Part 23, RIN 3038—AC97, “Margin Requirements for Uncleared Swaps for Swap Dealers and Major Swap Participants”. April 28 2011;

See also a summary of US legislation and rules relevant to energy swaps in appendix 3.

- a. **Encourage greater use of standardised, centrally cleared exchange traded swaps; and**
- b. **Discourage deliberate trading of non-standardised swaps to avoid regulatory capture.⁷**

Improved regulation of OTC markets will benefit retailers and generators through increased liquidity on the centrally cleared market resulting from a migration away from illiquid, riskier non-cleared swaps. With more liquidity on the exchange traded market, bid-offer spreads will be tighter and transparent markets will be deeper, enabling NEM participants to manage their portfolios with improved efficiency. Monthly futures, financial year options and quarterly average rate (Asian) options are expected to be launched on the centrally cleared futures market soon⁸, further increasing centrally cleared electricity hedge alternatives for NEM participants. At present, the ASX24 has 1,620 centrally cleared Australian electricity futures and options contracts available for trading, listed out to 4 years ahead.

6. New AFSL requirements for Electricity insufficient to cover OTC credit risk

As acknowledged in the Issues Paper, the proposed amendments to AFSL requirements of issuers of OTC electricity derivatives are not intended to guarantee the performance of OTC exposures. The proposed net tangible asset test of \$150,000 or 10% of the AFSL holder's annual revenue is insignificant in comparison to the inherent volatility and credit default risk exposures in OTC electricity markets. A base load generator's annual revenue can be roughly approximated as the face value of one year of base load swap (or futures) contracts in the relevant NEM region. From January 2007 to October 2007, QLD base load futures covering 2008 rallied 169%. i.e. 169% of a QLD generator's expected annual revenue or \$491 million for every 1,000 MW of OTC swap.⁹

7. Using Electricity Options to minimise hedge cash flow requirements

Option based hedge strategies can minimise potential (negative) cash flows associated with variation margining on centrally cleared markets. For example, **retailers can buy call options and generators can buy put options (or related strategies) to hedge against a forward market move while limiting the size of potential negative cash flows arising from the hedge.**

d-cyphaTrade ASX electricity options can provide hedging against forward curve moves up until the expiry of the option, out to 3 years ahead. During 2011, ASX electricity options traded the equivalent of 82% of annual underlying NEM system demand, illustrating the popularity and liquidity of this hedge product. ASX electricity option premiums are marked-to-market rather than requiring the hedge purchaser to pay the premium upfront.

⁷ See excerpt from the Financial Stability Board report in Appendix 2.

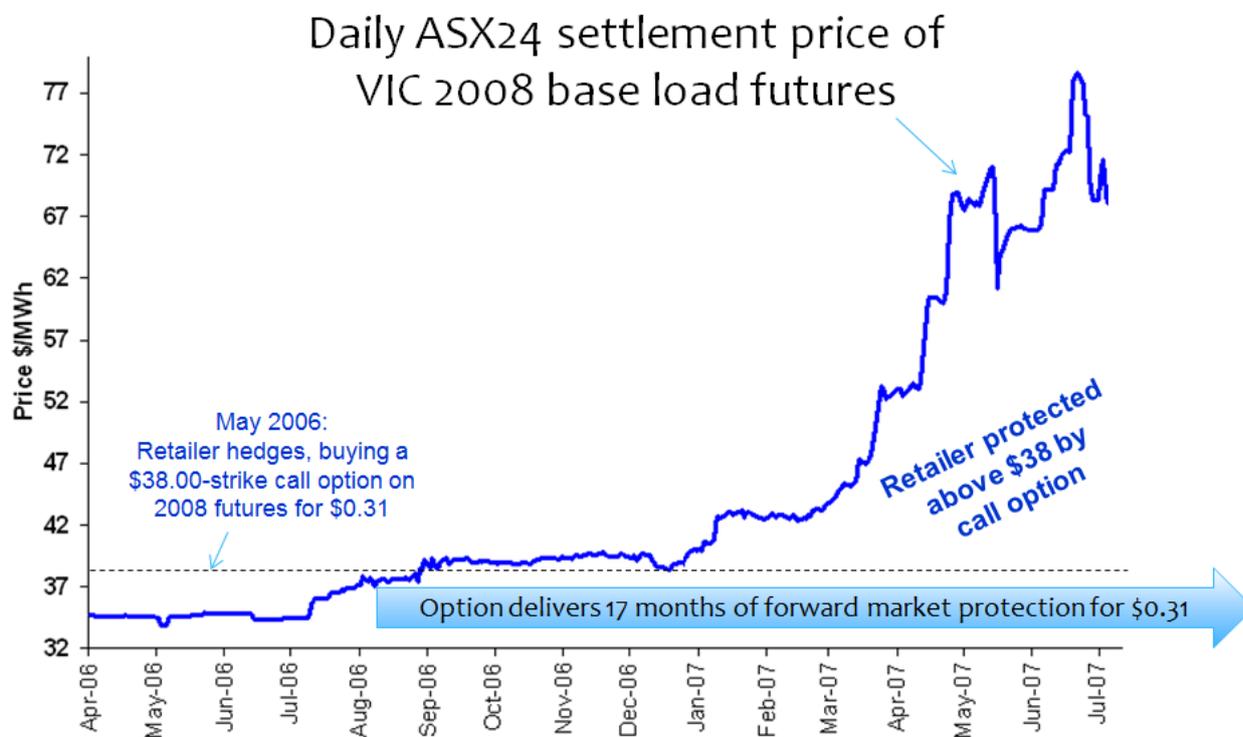
⁸ Pending regulatory approval and implementation.

⁹ The ASX24 daily settlement price of QLD base load 2008 futures rallied 169%, from \$33.05/MWh in Jan 2007 to settle at \$89.00/MWh in October 2007. Selling 1,000 MW of an OTC swap at \$33.05/MWh covering Calendar 2008 base load (24 hours x 366 days) would result in a OTC derivative liability of: (\$89/MWh - \$33.05/MWh) x 1,000 MW x 24 hours x 366 days = \$491 million.

The following example illustrates how in May 2006 a Victorian electricity retailer could have purchased a \$38-strike call option over 2008 futures for \$0.31/MWh plus transaction cost, providing a hedge against a forward market rally above \$38/MWh for the next 17 months (until the option expiry date). Despite holding this hedge protection, the retailer's worst case hedge cost and hedge cash flow exposure was limited to the \$0.31/MWh premium paid for the option. If the futures price as at the expiry date of the option was less than the \$38 option strike price, the retailer could abandon the option (forfeiting the option premium) and instead purchase futures from the futures market at the lower prevailing market price.

Hence, electricity options are used as a hedge insurance product, protecting retailers and generators against adverse forward curve movements beyond the option strike price. Alternatively, the potential cost of an existing futures or OTC hedge position can also be limited (i.e. financially offset) by purchasing options. New option products such as cash settled base load average rate quarterly options and options over financial year futures will further increase the range and flexibility of option hedge alternatives with limited working capital draw down risk, for electricity market participants.

Diagram 4. Centrally cleared options can minimise (negative) hedge cash flows.



8. Conclusion and Recommendation

It would be imprudent for Australian policy makers to permit a breach of Australia's G20 OTC reform commitments by ignoring the opportunity to substantially eliminate OTC credit default risk and related financial interdependencies between Australia's non-bank issuers of OTC electricity derivatives. The ongoing privatisation of electricity businesses has precipitated the withdrawal of key government financial support from both (i) the NEM spot market prudential arrangements and (ii) the multi-billion dollar OTC electricity derivative market. Australian policy makers should not be complacent,



particularly given the substantial historical evidence from offshore OTC electricity markets of the potential for a major OTC default by a generator or retailer to trigger a catastrophic cascading electricity market default crisis requiring tax payer funded bailouts of major electricity companies.

Australia's commitment to the G20 OTC reform initiatives provides an immediate and simple solution to the significant systemic default risks which threaten the stability of Australia's financial electricity market systems.

Yours sincerely,

Dean Price.
General Manager.

Appendix 1.

Why Central Clearing, Variation margins and Initial margins are being mandated by the G20.

CFTC excerpt: "During the recent financial crisis, derivatives clearing organizations ("DCOs") met all their obligations without any financial infusions from the government. By contrast, significant sums were expended as the result of losses incurred in connection with uncleared swaps, most notably at AIG. A key reason for this difference is that DCOs all use variation margin and initial margin as the centerpiece of their risk management programs while these tools were often not used in connection with uncleared swaps. Consequently, in designing the proposed margin rules for uncleared swaps, the Commission has built upon the sound practices for risk management employed by central counterparties for decades. Variation margin entails marking open positions to their current market value each day and transferring funds between the parties to reflect any change in value since the previous time the positions were marked. This process prevents losses from accumulating over time and thereby reduces both the chance of default and the size of any default should one occur. Initial margin serves as a performance bond against potential future losses. If a party fails to meet its obligation to pay variation margin, resulting in a default, the other party may use initial margin to cover most or all of any loss based on the need to replace the open position. Well-designed margin systems protect both parties to a trade as well as the overall financial system. They serve both as a check on risk-taking that might exceed a party's financial capacity and as a resource that can limit losses when there is a failure. The statutory provisions cited above reflect Congressional recognition that (i) margin is an essential risk-management tool and (ii) uncleared swaps pose greater risks than cleared swaps."

Source: COMMODITY FUTURES TRADING COMMISSION, 17 CFR Part 23, RIN 3038—AC97, "Margin Requirements for Uncleared Swaps for Swap Dealers and Major Swap Participants". April 28 2011. p.2.



Appendix 2.

Why non-cleared swaps must be subject to variation margins and initial margins.

Financial Stability Board excerpt: "Margin requirements for non-centrally cleared OTC derivatives transactions are an important element of the reforms necessary for achieving the overall objective of mitigating systemic risk in the derivatives markets. Such requirements would ensure that minimum levels of collateral are collected to insulate against losses caused by the default of a counterparty to an OTC derivatives transaction. Margin requirements would also help align incentives between central and non-central clearing and, in particular, help to suppress incentives that might otherwise exist for market participants to customise contracts in order to avoid central clearing requirements. In this regard, they can also encourage increased standardisation and central clearing of derivatives."

Source: "OTC Derivatives Market Reforms, Third Progress Report on Implementation", Financial Stability Board, 15 June 2012, p.31 <http://www.bis.org/publ/bcbs206.pdf>.

Appendix 3

Summary of US OTC reforms

The US Dodd Frank legislation and Draft CFTC Rules provide a useful benchmark for Australian and other G20 policy makers to consider in meeting their G20 OTC reform commitments with regards to OTC electricity markets. Specifically, the US reforms include:

- a. The capture of commodity derivatives including energy swaps;
- b. The capture of non-bank "Major Swap Participants", defined as "A *person whose outstanding swaps create "substantial counterparty exposure that could have serious adverse effects on the financial stability of the United States banking system or financial markets."*; and
- c. The de-risking of non-cleared OTC derivatives, using (i) regular mark-to-market margining, (ii) initial margins (iii) Net Tangible Asset requirements. The CFTC draft rules covering non-centrally cleared swaps provide precise margin calculation methodology for Major Swap Participants to adopt.

Appendix 4

Glossary of Abbreviations

AEMC	Australian Electricity Market Commission;
AEMO	Australian Energy Market Operator (pool market operator);
AFSL	Australian Financial Services License;
ASIC	Australian Securities and Investment Commission;
CFTC	Commodity Futures Trading Commission;
GFC	Global Financial Crisis;
NEM	National Electricity Market (electricity spot/pool markets incorporating NSW, VIC, QLD, SA and TAS);
OTC	Over the Counter [derivative];
RoLR	Retailer of Last Resort.