



ASIC

Australian Securities & Investments Commission

REPORT 390

Review of OTC electricity derivatives market participants' risk management policies

April 2014

About this report

This report summarises the findings of our review of the risk management policies of Australian financial services (AFS) licensed entities that deal or make a market in over-the-counter (OTC) derivatives in relation to wholesale electricity markets in Australia (market participants).

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Executive summary

- 1 We have conducted a review of the risk management policies and related documentation of Australian financial services (AFS) licensed entities that deal or make a market in over-the-counter (OTC) electricity derivatives in Australia (market participants). This report summarises our findings from the review and highlights some of the risk management practices that we have observed.
- 2 Our review principally focused on the content of written risk management policies and practices of the market participants surveyed. We therefore did not undertake a comprehensive survey of how each market participant implemented each of the policies they provided details to us about.
- 3 Generally, we consider that market participants' risk management policies and practices appear to be appropriate to the nature of their business, taking into account the size and complexity of the financial services business they conduct.

Background

- 4 In most Australian states and territories, electricity is bought and sold through wholesale markets. Many of the market participants in these physical electricity markets also deal in OTC derivatives relating to the wholesale price of electricity as part of the ordinary course of their business. It is this dealing in derivatives that relates to the wholesale price of electricity that requires them to hold an AFS licence with appropriate authorisations.¹
- 5 The Australian Securities and Investments Commission (ASIC) is responsible for licensing and monitoring the relevant financial services business provided by electricity businesses. However, we have no role in regulating the physical electricity business, or other activities in physical energy markets, of these licensees. Agencies with responsibility for various aspects of the electricity sector include the Australian Energy Market Commission (AEMC), the Australian Energy Market Operator and the Australian Energy Regulator. For example, the AEMC is currently consulting on the resilience of the financial relationships and markets that underpin the operation of the National Electricity Market: see paragraph 19.

¹ Regulation 7.6.01(m) of the Corporations Regulations 2001 (Corporations Regulations) provides an exemption from the requirement to hold a licence for certain derivative transactions used for hedging purposes. However, it also states, 'Example of financial service to which paragraph (m) does not apply: The issue and disposal of derivatives relating to the wholesale price of electricity are not transactions to which this paragraph applies.'

Consultation Paper 177

- 6 In May 2012, we consulted on changes to the financial requirements for market participants: see Consultation Paper 177 *Electricity derivative market participants: Financial requirements* (CP 177).
- 7 Although we decided to defer any decision in relation to the financial requirements, in Report 320 *Response to submissions on CP 177 Electricity derivative market participants: Financial requirements* (REP 320) we clearly indicated that we still had concerns about the risk management practices in the OTC electricity derivatives sector.
- 8 Like all AFS licensees, market participants must comply with certain conduct obligations under the *Corporations Act 2001* (Corporations Act). This includes ensuring they maintain adequate risk management systems: see s912A(1)(h).
- 9 To help address our concerns, we decided to review the adequacy of the risk management policies of market participants.

What we did

- 10 We set out to obtain information on risk management from a broad range of non-bank stakeholders operating in the OTC electricity derivatives market, including retailers, generators, generators with a retail arm (gentailers), renewable energy providers and electricity traders. In all, a total of 19 market participants were reviewed. Some of these market participants controlled multiple entities operating in the sector.
- 11 We reviewed the documentation provided by market participants according to the following categories of interest:
- (a) corporate governance, including structure and policies, roles and responsibilities, segregation of duties, product approvals, authorisations and delegations, breaches and escalation processes (see Section A);
 - (b) credit support, including International Swaps and Derivatives Association (ISDA) master agreements and credit support annexes, variation and initial margins, ratings matrices, guarantees and thresholds (see Section B);
 - (c) market risk limits, including volumetric, regional, peak/off-peak, Delta, face value, hard and passive limits (see Section D);
 - (d) risk metrics, including at-risk measures, stress and scenario tests, default probability and potential future exposure (see Section D); and
 - (e) systems, escalation processes, rectification, operational processes and specific risks such as shape and flex risk, outage and forecast risk (see Sections A, C and D).

- 12 In making our findings, we were mindful of the nature, scale and complexity of a market participant's financial services business when considering whether they had adequate risk management policies.
- 13 'Nature, scale and complexity' includes the following factors:
- (a) the products and services the market participant offers;
 - (b) the diversity and structure of the market participant's operations (including the geographical spread of its operations and the extent to which it outsources any of its functions);
 - (c) the volume and size of the transactions for which the market participant is responsible;
 - (d) how many of the market participant's clients are retail and how many wholesale;
 - (e) whether the market participant gives financial product advice and, if so, whether it is personal or general advice;
 - (f) whether the market participant's main business is the provision of financial services; and
 - (g) the number of people in the market participant's organisation.²

Other information considered

- 14 We also took into consideration the other work being undertaken in relation to market participants that would be relevant to all licensed participants' risk management practices, including the work set out in paragraphs 15–19.

The G20 reforms to OTC derivatives markets

- 15 In September 2009, the Group of 20 (G20) leaders made the following commitments to undertake significant reforms of OTC derivatives markets. The commitments included requiring all:
- (a) standardised OTC derivatives contracts to be centrally cleared through central counterparties;
 - (b) OTC derivatives contracts to be reported to trade repositories; and
 - (c) standardised OTC derivatives contracts to be traded on exchanges or electronic trading platforms, where appropriate.
- 16 To support these reforms ASIC, the Australian Prudential Regulation Authority (APRA), the Reserve Bank of Australia (RBA) and Treasury (the Council of Financial Regulators) has undertaken a number of public

² See Regulatory Guide 104 *Licensing: Meeting the general obligations* (RG 104) at RG 104.22.

consultations on, and surveys of, the Australian OTC derivatives market, and has published its findings in periodic reports.³

- 17 The Council of Financial Regulators' *Report on the Australian OTC derivatives market: October 2012* (the CFR report) noted that the interdependency of market participants in the electricity derivatives market makes it important that they have in place appropriate risk management practices. The CFR report also highlighted the differences between the risk management practices used by market participants. For example, a number of market participants indicated that they do not provide cash or other collateral to their counterparties, instead, they generally use alternative arrangements such as letters of credit or parent guarantees. The responses also did not provide a clear picture of the use of industry standard documentation, such as International Swaps and Derivatives Association (ISDA) master agreements or credit support annexes to ISDA master agreements.
- 18 The CFR report observed that these factors may lead to large uncollateralised exposures among market participants, and noted that this could make them particularly vulnerable if a counterparty was to default, with the potential to disrupt the resilience and stability of the market. The CFR report concluded that it may be appropriate to strengthen counterparty credit risk management practices, for example, by requiring market participants to establish, over an appropriate period of time, credit support agreements (or equivalent arrangements).

AEMC financial resilience review

- 19 The AEMC has also been reviewing the resilience of the financial arrangements underpinning the National Electricity Market. To date, the AEMC has published two papers relating to this work:
- (a) an interim report in June 2013, which outlined options for reforms to the retailer of last resort arrangements in the National Electricity Market;⁴ and
 - (b) a stage two options paper in November 2013, which set out the AEMC's views on systemic risk arising from financial links between market participants in the National Electricity Market.⁵

³ See Council of Financial Regulators, *Report on the Australian OTC derivatives market: July 2013*, report, 17 July 2013, at www.cfr.gov.au/publications/cfr-publications/2013/report-on-the-australian-otc-derivatives-market-july/index.html; Council of Financial Regulators, *Report on the Australian OTC derivatives market: October 2012*, report, 30 October 2012, at www.rba.gov.au/payments-system/clearing-settlement/otc-derivatives/201210-otc-der-mkt-rep-au/index.html; Council of Financial Regulators, *Survey of the OTC derivatives market in Australia: May 2009*, report, 22 May 2009, at www.rba.gov.au/payments-system/clearing-settlement/survey-otc-deriv-mkts/

⁴ AEMC, *First interim report: NEM financial market resilience*, report, 4 June 2013.

⁵ AEMC, *Stage two options paper: NEM financial market resilience*, options paper, 8 November 2013.

Benchmark Electricity Risk Management Calculator (BERC) model

- 20 In addition to a general review of the documentation we obtained, we developed the Benchmark Electricity Risk Management Calculator (BERC) model to review, against a consistent set of metrics, the risk management practices and documentation of market participants. Using the BERC model, we created industry comparison benchmarks that allowed us to analyse the quality and completeness of each market participant's risk management documentation relative to other surveyed market participants.
- 21 To create the benchmarks we used the following method:
- (a) listed all risk management practices that were referred to in all market participants' risk management policies, and reviewed each market participant's policy against this list to determine which risk management practices were referred to; and
 - (b) categorised the risk management practices into the five categories set out in Table 1.
- 22 The five categories in Table 1 are based on our assessment of:
- (a) the importance of the practice as part of the overall risk management policy of the market participant, including whether the market participant had a general risk management policy and/or a risk management policy dedicated to a specific risk (e.g. a credit risk policy and the methodology used to measure a practice);
 - (b) the degree of detail in the description of the practice;
 - (c) the frequency that the practice is stated to be applied by the market participant; and
 - (d) the number of market participants that referred to each practice in their policy.
- 23 We weighted each practice from one to 10 (10 being the most important) to reflect how important we considered each practice to be, relative to the overall risk management policies of market participants. Our weightings were based on a number of factors, including the importance market participants attributed to the relevant practice (as evidenced by their risk management policies) or by entities operating in comparable markets (e.g. dealers in the broader OTC derivatives market). This allowed us to score each surveyed market participant for each risk management practice. The BERC model provided us with a framework to review the completeness and comprehensiveness of a market participant's risk management practices, by allowing a detailed comparison of a market participant's documented risk management practices with the documented practices of the other surveyed market participants.

Table 1: Risk management practices

Best practices	Practices documented by a smaller number of market participants that appeared to be recognised as required practice by those market participants
Enhanced practices	Practices documented by a smaller number of market participants, particularly large-sized market participants, that were similar in nature but were additional risk management practices
Discouraged practices	Practices documented by market participants that appeared to be recognised as practices that should not be undertaken without also adopting some mitigating practices
Regular practices	Practices documented by a large number of market participants that appeared to be accepted industry practice
Characteristic practices	Practices that were inherent features of participating in some markets

- 24 In this manner we created a benchmark score based on industry practices where the importance of a risk characteristic is weighted.
- 25 The BERC model allowed ASIC to gain insight into:
- (a) what market participants' policies require them to do in relation to risk management practices;
 - (b) what each market participant does and does not do; and
 - (c) potential gaps in risk management policies and whether they are relevant to the market participants' general licensing obligations, or potentially raise systemic risk issues (i.e. systemic risk for the physical electricity market).

What we found

- 26 On the basis of the documentation we reviewed, we found that although the risk management practices of market participants are varied, they are generally quite comprehensive. We did not identify any areas of significant concern.
- 27 While the documented risk management practices varied, we found that the market participants' documentation addressed many of the main risks which we consider relevant.
- 28 The breadth, depth and innovative nature of the documentation of medium-sized market participants was the most impressive. Some of the best aspects of their documentation were that directives and tools for risk management

were clearly set out and could easily be understood by traders and management.

- 29 Although smaller-sized market participants did not have equally comprehensive policies, in many cases we considered their documentation appropriate to the nature, size and complexity of their electricity derivatives business. A few smaller-sized market participants also had documentation that was similar in quality to some of their larger peers.

Industry practices

- 30 Our review also allowed us to identify which risk management practices were commonly adopted by market participants. Paragraphs 31–37 summarise our findings in relation to the extent to which surveyed market participants had relevant documented risk management practices that were common amongst all market participants. We have categorised (for the purposes of this part of the report) the industry risk management practices on the basis of the percentage of market participants who have documented a particular identified industry risk management practice.

Note: The BERC model also involves categorising risk management practices. Under the BERC model five discrete categories of risk management practices are specified, see Table 1. As explained above in paragraphs 20–25 the BERC model was used by ASIC to complete a detailed and comparative assessment of the quality and completeness of the risk management documentation by market participants. Under the BERC model the five categories for risk management arrangements are based on a number of factors, including the frequency that a particular risk management practice is used by industry.

- 31 The three categories of industry risk management practices we identified in our statistical review of industry practices are:
- (a) mainstream practices, used by more than 50% of market participants (see Figure 1);
 - (b) conventional practices, used by 25%–50% of market participants (see Figure 2); and
 - (c) distinctive practices, used by 10%–25% of market participants (see Figure 3).⁶
- 32 On average, mainstream practices were adopted by 74% of market participants (81% when weighted by size). Table 2 provides a summary of mainstream practices, for a full list see Figure 1 in the Appendix.

⁶ These are not ASIC benchmarks or standards—they are merely representative of industry use of various practices across the population reviewed. We have also not included any practices undertaken by less than 10% of market participants, as it may identify those involved.

Table 2: Characteristics of mainstream practices (used by more than 50% of market participants)

Characteristic	Practice	Percentage
Policies	Risk management policy	100%
	Risk limits	95%
	Escalation policy	74%
	Delegated authorities	63%
	Liquidity policy	63%
Credit support	ISDA master agreements	84%
	Counterparty limits	84%
	Bank guarantees	74%
	Ratings limits	74%
	Reliance ratings limits	68%
	Netting agreements	58%
	Credit support annex	53%
Governance	Risk committee	100%
	Risk committee escalation	100%
	Roles and responsibilities	89%
	Front, back and middle office segregated	79%
Risk metrics	'Earnings at risk' measure	63%
	'Value at risk' measure	53%
	Stress testing	53%
Valuation	Mark-to-market methods	84%
Operational risks	Authority to transact	58%
Specific risks	Forecast risk	68%

33 On average, conventional practices were adopted by 37% of market participants (47% when weighted by size). Table 3 provides a summary of conventional practices, for a full list see Figure 2 in the Appendix.

Table 3: Characteristics of conventional practices (used by 25%–50% of market participants)

Characteristic	Practice	Percentage
Policies	Credit policy	47%
	Approved regions	42%
	Proprietary trading	32%
	Product approvals	32%
Credit support	Bank letters of credit	37%
	Individual credit analysis	37%
	Parent guarantees	37%
	Group limits	37%
	Maturity limits	37%
Governance	Independent risk manager	37%
	Project risk committee	26%
Risk metrics	Scenario testing	32%
	Potential future exposure	32%
	'Cashflow at risk' measure	26%
Valuation	Hedge accounting	42%
Operational risks	Delegations	42%
	Settlement policy	42%
	Confirmations policy	37%
	Amendment trade audits	32%
Specific risks	Breach reporting	47%
	Regulatory compliance	42%
	Rectification process	42%
	Officer competency	26%

34 On average, distinctive practices were adopted by 17% of market participants (20% when weighted by size). Table 4 provides a summary of distinctive practices, for a full list see Figure 3 in the Appendix.

Table 4: Characteristics of distinctive practices (used by 10%–25% of market participants)

Characteristic	Practice	Percentage
Policies	Stop loss policy	21%
	Code of conduct	21%
	Management action limits	16%
Credit support	Unrated limits analysis	21%
	Pre-delivery cash requirement	21%
	Deed of cross guarantee	16%
	Excessive thresholds	16%
	Guarantees	16%
Risk metrics	'Credit value at risk' measure	21%
	'Futures margin at risk' limits	21%
	Default probability analysis	11%
	'Futures value at risk' measure	11%
Valuation	Mark-to-model method	16%
Operational risks	Graded authorisations and limits	21%
Specific risks	Fat tail risk	21%
	Credit reviews	21%
	Outage risk	16%
	Credit utilisation review	11%
	Shape risk	11%
	Flex risk	11%

35 On the basis of our review, it appears that market participants consider prudent risk management for smaller-sized market participants to include, at a minimum:

- (a) documented risk management practices and a governance structure;

- (b) adequate credit monitoring;
 - (c) appropriate management oversight of the trading business; and
 - (d) a process for dealing with breaches of trading limits in an appropriate and efficient way.
- 36 In addition to the industry practices set out in paragraphs 28–32, medium-sized market participants, or those with a reasonable level of OTC derivatives activity, could consider:
- (a) having segregation of duties and clearly defined roles and responsibilities;
 - (b) conducting daily mark-to-market evaluations;
 - (c) formal, regular reporting to management or the executive;
 - (d) stress testing of positions;
 - (e) regularly reviewing material concentration of credit exposure;
 - (f) appropriate banking relationships; and
 - (g) a process for carrying out some form of risk analysis.⁷
- 37 Large-sized market participants, and market participants with a higher level of OTC derivatives activity, appear to understand that they can adopt a more sophisticated risk management system, including having additional measures and monitoring arrangements. In addition to the practices mentioned in paragraphs 33–34, the market's views are that it is useful for the risk management policies of large-sized market participants to include:
- (a) some form of scenario testing in addition to stress testing (to monitor positions);
 - (b) arrangements to annually review credit limits (to determine if credit limits may create large exposures to one or more counterparties) and for management to review usage against credit limits; and
 - (c) reviewing enhanced or additional practices identified by the BERC model to determine whether they are appropriate for their business.

⁷ Medium-sized market participants could also consider whether other practices are appropriate for their business. This may be a one-off or ad hoc consideration.

A Corporate governance

Key points

Overall, market participants appear to have reasonably comprehensive corporate governance documentation in place, with almost all market participants having documented risk management practices and established formal risk committees.

Governance structure and practices

- 38 Market participants had solid risk management frameworks that were supported by well-documented policies and practices. The policies showed that these market participants had identified the more serious and relevant risks to their business, and put in place a framework for risk identification and controls, together with appropriate breach reporting and escalation processes.
- 39 Risk management policies for more serious risks were contained in a separate risk policy document with appropriate references to related policies.
- 40 Some policies were quite voluminous and lacked information about when they had been last reviewed and which version had received the approval of the board or other governing body. Although there may be complex issues that need to be addressed, some of the best policies contained opening summaries outlining crucial information, for example, responsibilities, approvals and escalation processes.
- 41 We observed many examples of clearly defined roles and responsibilities in the documentation provided as part of our review. Almost all of the market participants had policies that clearly set out the responsibilities, reporting lines and accountability of various parts of the business. Some of the best examples incorporated images, flowcharts or tables into their documentation to illustrate this.
- 42 Appropriate delegations and authorisations are used to assist with the efficient day-to-day running of a market participant. We found many cases of delegated authority that were defined and supported by documentation.

Observations

Market participants appear to recognise that it is prudent risk management practice to regularly review risk management policies and to note on them the review and approval dates. Some market participants recognised that senior management or executive approval (i.e. board approval), should be obtained for material changes.

Market participants were generally aware that policies should be accessible and easy to understand. Some achieved this by providing summaries or directives for long or complex policies, and using quick reference tools to highlight required actions and responsible personnel.

Segregation of duties

- 43 A large majority of the surveyed market participants discussed the clear segregation of front-, middle- and back-office duties in their risk management policies.
- 44 On the issue of conflicts of interest, we found that a number of market participants:
- (a) recognised the importance of ensuring that trades are verified by an individual whose remuneration is not tied to trading performance;
 - (b) used sophisticated software systems with individual account preferences that automatically restricted individuals from being able to participate in an action that would conflict with their role; and
 - (c) segregated the task of deal entry error correction to a person independent from the trader.

Observations

Medium- and large-sized market participants recognised in their policies that it is prudent risk management practice to have, and document, arrangements for segregation of duties.

Product approval

- 45 All market participants appeared to have board or executive-level approved products. Nearly half of the market participants surveyed had product approval committees and a new-product approval process, however, only one third of market participants had documented their processes.

- 46 There were differences in the level of detail for the product approval limitations. The market participant's products could include any, or a combination, of the following limits in addition to the product:
- (a) region;
 - (b) product type;
 - (c) product by trader;
 - (d) product by counterparty;
 - (e) product by volumetric limit; and
 - (f) product by buy and/or sell restrictions.

Observations

The risk management policies of most market participants addressed the product approval process, however, the level of detail in the policies varied.

Breaches and escalation

- 47 We generally found that market participants recognised the importance of supporting risk management policies, procedures and limits with clear, transparent escalation processes for when breaches occur. We also found that market participants generally considered it prudent business practice to ensure there is independence in this process and in reporting to senior or executive-level management where appropriate.
- 48 The majority of market participants had a formal escalation process included in their risk management policies.

Observations

The majority of market participants' risk management policies contained a clear description of:

- the types of breaches that could occur; and
- the escalation process.

Some documented escalation and resolution processes showed that they:

- were relevant to the area of breach—for example, breaches of volume limits, market limits or credit limits;
- were relevant to the cause of breach—for example, a market movement (i.e. a passive breach), a technical breach or a deliberate action (i.e. position taking); and
- included clearly defined responsibilities—for example, who determines rectification actions, who informs senior management, and who ensures that rectification actions have been signed off.

B Credit risk

Key points

Market participants assess credit risk by determining the creditworthiness of the counterparty, counterparty groups and credit ratings, either individually or in totality.

Although policies for managing credit risk varied between market participants, the majority managed credit risk by monitoring credit usage against credit limits. However, policies generally showed that market participants have processes to increase established credits limits if the required credit support and internal approvals are obtained. Credit support is documented and ranked.

The interconnectedness of market participants, and the relatively small number of market participants with a significant market presence, creates concentration risk.

Credit risk concentration management

49 The importance of credit risk concentration management was recently reiterated by the AEMC:

....market participants are financially interconnected through bilateral 'over-the-counter' (OTC) hedge contracts between participants and sometimes intermediaries.... Financial contagion occurs where the failure of, or large losses borne by, one market participant precipitates the failure of, or large losses borne by, a second participant.... In a market with extensive interconnectedness the contagion could therefore cause a 'cascading' effect.... We use the term *coincidence* to describe the possibility of severe losses or even failure of multiple participants due to a number of unfavourable events occurring at the same time as the failure of an individual participant.... Interconnectedness, contagion, and coincidence are all interrelated.⁸

Assessing credit risk

50 Market participants assessed credit risk by determining the creditworthiness of their counterparty. Almost all market participants relied on the public rating provided by an approved credit rating agency to do so. Although, some market participants did take into account additional information, for example, the counterparty's financial statements.

⁸ AEMC, *Assessing Financial Resilience in the National Electricity Market*, options paper, 8 November 2013, pp 6-8.

- 51 Almost all market participants reported using the following basic analysis:
credit risk = settlement risk + replacement risk
- 52 The more detailed policies extended this analysis to include:
- (a) *Potential future exposure (PFE)*: the extent to which the market value of existing transactions could move over the lifetime of the transaction, possibly resulting in a greater mark-to-market exposure.
credit risk = settlement risk + replacement risk + PFE
- (b) *Credit Support (CS)*: the amount of credit support held which would be subtracted from the market participant's credit risk exposure.
credit risk = settlement risk + replacement risk + PFE – CS
- 53 All market participants managed credit risk by, at a minimum, assigning a credit limit to a counterparty and monitoring the counterparty's usage against the assigned credit limit. Some market participants included their exposure to related entities or members of the same group of the counterparty.
- 54 Distinctions were sometimes drawn between counterparty limits, group limits and rating limits, individually and in totality.
- 55 Credit risk exposures are:
- (a) the amounts owed to the market participant;
- (b) the market value or replacement value of contracts in place; and
- (c) an estimate of the extent the value of those contracts can move into the money for the market participant.
- 56 The maximum credit exposure is the market participant's total credit risk exposure overall.

Observations

Some market participants recognise that they should avoid relying solely on the public rating of a credit rating agency or a standardised credit rating matrix when assessing a counterparty's creditworthiness. Some risk management policies also reflected that sole reliance on historical levels of corporate default could be a risk in itself.

Having more than one method of assessing creditworthiness helps avoid the risk of historical levels of default creating a false sense of security, which may allow disproportionately high credit limits to be set.

Determining, monitoring and reviewing credit limits

- 57 Almost all market participants use the public rating of a counterparty by an approved credit rating agency as the basis for assigning a credit limit. In many cases, this was the only basis for assigning a credit limit—although

- some medium- and large-sized market participants used more complex credit risk matrices that addressed risk impact and probability.
- 58 Very few risk management policies considered how a credit limit should be assigned in the event of conflicting public ratings or a credit rating downgrade.
- 59 Many market participants distinguished between assigning a credit limit for a publicly-rated entity and an unrated entity and, to a lesser extent, between private and government-owned entities.
- 60 While some medium- and large-sized market participants carried out their own credit assessment, using information such as financial statements and the counterparties' trade history, other market participants obtained a private rating from a credit rating agency.
- 61 Most policies allowed credit limits to be increased in the following circumstances:
- (a) unplanned generation outages;
 - (b) illiquidity in the market;
 - (c) mark-to-market movements;
 - (d) legacy credit exposures; and
 - (e) changes in the corresponding rating by the credit ratings agency (i.e. an upgrade would result in an increase under the ratings matrix).
- 62 The risk management policies of some medium- and large-sized market participants provided for credit limits and maximum credit exposure to be reviewed at least annually. Policies generally included strategies for reducing credit risk if monitoring of credit usage found a breach or potential breach of credit limits. In addition to the provision of credit support, strategies included:
- (a) credit washing—that is, another party stepping into the trade through:
 - (i) novation with payment;
 - (ii) novation taking on the current mark-to-market exposure; or
 - (iii) movement to exchange through exchange for physical;
 - (b) entering transactions with a reduced exposure duration;
 - (c) reducing outstanding volume by termination if there are matching deals; or
 - (d) prepayment of premium or step-in rights to the end of the customer load agreement.
- 63 Very few market participants' risk management policies provided details of stress testing or addressed how regularly a market participant's exposure to

credit value at risk or credit risk should be calculated—although some policies did take into account potential future exposure on a regular basis.

64 We consider that appropriate settings for credit limits can be a useful tool for monitoring and mitigating concentration risk, however, these were only addressed in a small number of market participants' risk management policies. These policies stated that concentration risk may result from the assignment of higher counterparty credit limits. They also acknowledged that it was difficult to manage this risk due to the small number of market participants in the market. The methods used for managing concentration risk included:

- (a) monitoring credit usage, particularly through the use of triggers. Triggers were typically calculated on a percentage basis, recognising that exposures fluctuate in response to market movements and the structure of the market participant's portfolio; and
- (b) adjusting and transferring the initial limits from one counterparty to another, where limits restricted the market participant's ability to manage their exposure to market risk. Use of this mechanism required approval at both a senior level and by more than one individual.

Observations

There is growing recognition among market participants that they should implement and document risk management practices to review and reduce credit limits, including limits that are consistently higher than the actual level of usage. Practices include:

- involving, as appropriate, senior management or the executive (i.e. the board);
- considering if counterparty credit limits and maximum credit exposures are too high given the size of the market participant; and
- considering whether concentrated credit limits may have repercussions for the physical electricity market and create systemic risk.

At least one market participant considered prudent risk management should include setting credit limits at a level that enables a market participant to implement its approved hedging or trading strategy in normal market conditions. Credit limits beyond this level were reviewed and reduced, as appropriate.

Market participants recognise that it is good risk management practice to address concentration risk in risk management policies, for example, by providing for the effective monitoring and review of credit limits and usage.

Credit support and documentation

65 Most market participants required credit support when credit limits or thresholds had been or were about to be reached. More than half of the

- market participants surveyed documented this in an ISDA master agreement with a credit support annex.
- 66 Typically, cash, bank guarantees, parent guarantees and letters of credit (not always stipulated as unconditional) are accepted before other types of credit support.
- 67 Many risk management policies did not distinguish between credit limit breaches arising from mark-to-market movements (i.e. passive breaches in existing trades or the valuation of credit support) and those breaches arising from other factors (e.g. entering into new trades).
- 68 Risk management practices differed in relation to the level of seniority required to approve continued trading with a counterparty that was in, or was approaching, a credit limit breach.
- 69 Very few market participants' risk management policies distinguished between:
- (a) conditional credit support, which could be called on in stipulated circumstances (e.g. a downgrade of the public credit rating of the counterparty); and
 - (b) unconditional credit support, where trades would be regularly valued and appropriate credit support exchanged if applicable, in accordance with an agreed formula.
- 70 Generally, market participants did not clearly distinguish at what point of the transaction lifecycle 'collateral' and 'credit support' could be required. Some market participants did not post cash or other collateral, and instead relied on bank guarantees, parent guarantees, letters of credit or letters of guarantee.
- 71 The risk management policies of a number of medium- and large-sized market participants specified when trading would be permitted without an ISDA agreement—for example, where there are only a few transactions with a small counterparty and the costs of negotiating the agreement is not considered to be justified.

Observations

Most market participants, to varying degrees, documented the following credit support requirements in their risk management policies:

- when the market participant should ask counterparties to provide credit support;
- the types of credit support arrangements that can be used; and
- the types of situations where the market participant should ask a counterparty to negotiate and sign an ISDA master agreement and/or credit support annex.

C Operational and specific risks

Key points

Operational risk is the risk associated with people, systems and internal processes.

Poor management of operational risk increases the likelihood of trade errors and fraud. Practices such as trade confirmations and graded authorisations are commonly used to mitigate operational risk.

Operational risk management practices

- 72 A number of market participants provided documentation indicating that they had taken measures to ensure operational risks were addressed in their risk management policies.

Authority to transact and trading limits

- 73 A recognised operational risk management practice for dealing in OTC derivatives is ensuring that a trader has the authority to enter into negotiations and trades.
- 74 Some of the documentation we reviewed included a requirement that a market participant provide a list of authorised traders for each group of products (e.g. electricity, gas, environmental) to counterparties. This process was designed to ensure that only persons with the appropriate authorisation were involved in the transaction.
- 75 The risk management policies and practices for establishing authorisations for traders and limits for products were clearly documented by the majority of market participants.
- 76 Market participants often required that trading limits be approved by the board or the chief financial officer, although the authorisations and delegations of traders were often able to be made by appropriate senior managers.
- 77 The detail of graded limits differed between market participants with small exposures and market participants with significant or more complex exposures. Some market participants with more complex books set limits by region, volume and total dollar exposures (and other metrics), but most set limits at desk or product level and not at trader level.

Observations

Market participants recognise that they should document trader authorisations and trading limits. There is also some recognition among market participants that it is prudent risk management to use graded authorisations and limits for monitoring trading.

Confirmation, audit and settlement

- 78 We found that it is common industry practice to have a trade confirmation policy.
- 79 In some cases, market participants also had back-office trade confirmation procedures and required audits of trades and trade alterations. As the terms of a derivative contract may be amended by agreement from time to time, some market participants recorded and confirmed trade alterations in their trading systems in a way that is easily identifiable by an independent party, for example, an auditor.
- 80 Another risk management tool used by market participants involves ensuring that only authorised front- or back-office staff have access to passwords—limiting the type of transactional processes they can participate in.
- 81 Although, we found that there was little to no mention of passwords in the documentation that we reviewed, it is our understanding that many of the electronic trading systems used by market participants have some form of password protection built into those systems. Based on current industry practice, it would appear to be prudent business practice to implement a regular review of password authorisations and regularly refresh passwords to mitigate the risk of unauthorised and potentially fraudulent activities.

Observations

Market participants recognise it is a prudent risk management practice to have a trade confirmation policy, which addresses trade alterations and amendments, to mitigate against trade errors and fraud.

The use of passwords to ensure that only authorised front- or back-office staff can trade and authorise transactions appropriate to their function was generally not documented in market participants' risk management policies. The risk management practice of regularly reviewing and refreshing passwords to ensure authorisations remain up-to-date was also generally not documented.

D Market risk

Key points

Due to the high level of volatility in electricity markets, it is essential that market participants manage market risk effectively.

Market participants use a variety of tools to manage market risk, including:

- at-risk measures (e.g. 'value at risk', 'revenue at risk', 'margin at risk' and the more-common 'earnings at risk'), to measure market risk and set limits;
- stress testing and scenario testing; and
- hedging market exposure using a mix of OTC and exchange traded derivatives.

Products used to hedge market risk

- 82 All market participants in the National Electricity Market are exposed to market risk. Market risk is the risk to earnings that arises from movements in the electricity price, and changes in the demand and supply of electricity. To mitigate market risk, market participants use derivatives to hedge their exposure to electricity prices. Due to the exceptionally high level of volatility of electricity prices, it is critical that market participants have adequate risk management practices in place.
- 83 Market participants' risk management documentation referred to a variety of derivative products that can be used to hedge their electricity exposure. The type of products used to hedge against market risk is largely dependent on the size and complexity of the market participants' operations. The most frequently used derivative product types were swaps and caps, with nearly all market participants using both of these products.
- 84 Other products include futures, floors, swaptions, load following derivatives, settlement residue auctions and forwards (the last three of these are predominantly used by large-sized market participants). The range of products used is broader for market participants that have a proprietary trading book in addition to a hedge book. Market participants also indicated that they use a mix of OTC and exchange traded derivatives.

Risk metrics and limits

- 85 All market participants surveyed appeared to have some form of documented risk measurement practices. The most commonly used are various at-risk

- measures. Of these, 'earnings at risk' was the most frequently used, with over half of the market participants surveyed referring to this measure in their risk management documentation. 'Value at risk' and stress testing were also among the more-common tools referred to in market participants' documentation.
- 86 Other at-risk measures used included 'cash-flow at risk', 'revenue at risk' and 'futures margin at risk'. These at-risk measures are described in some risk management documentation as a way of determining the degree of potential losses at a given probability level, over a specified time period.
- 87 Some of the market participants' documentation referred to the use of at-risk measures in conjunction with stress and scenario testing. Implementing these policies together enabled market participants to gain a better understanding of the downside risks to their portfolio, and the situations in which they stand to make large losses.
- 88 The risk limits in place for most market participants were based on the risk management tools referred to in their policies. Again, the most frequently used tools were at-risk measures, particularly 'earnings at risk'. However, we generally found that while market participants' policies indicated the use of at-risk measures as a risk control or limit, they did not specify the thresholds at which the limit would be breached.
- 89 In addition to at-risk measures, the majority of market participants' documentation also referred to the use of volumetric limits. Despite the common usage of volumetric limits, only a relatively small proportion of market participants mentioned how they managed volumetric risks (the risk caused by the difference between forecast electricity demand and the amount actually consumed). The more comprehensive policies set out how volumetric risks related specifically to the market participant's business, how they managed the risk and the derivative products used to hedge this risk.
- 90 Other, less-frequently cited types of limits which are used include term limits (where there are restrictions on the length of time until the maturity of a derivative contract) and graded limits (where there are restrictions on the type, size and term of a contract entered into by an employee depending on their seniority and authorisations).
- 91 A small number of market participants used OTC derivatives for proprietary trading as well as for hedging their market exposures. Of the market participants that did undertake proprietary trading, very few expressly stated in their documentation how their proprietary trading book was risk managed differently to their hedge book (the documentation of these market participants focused on accounting and booking treatment of these positions). The more sophisticated policies indicated that the market participant had different controls and limits for their proprietary book, with

some of these also using different risk measures than used for their hedge book.

Observations

A number of market participants clearly addressed risk limits in their policies and included thresholds that would, if breached, give rise to escalation of the issue.

Market participants generally have in place risk management controls and limits that are appropriate to the risks associated with proprietary trading and hedging.

Some market participants also documented the need to stress test and scenario test complex or large portfolios.

Valuation

- 92 To value their derivative positions, the majority of market participants' documentation indicated that they used the mark-to-market method. 'Mark-to-market' is the practice of valuing positions according to observable prices on frequently traded markets.
- 93 In addition to the mark-to-market method, a small number of market participants indicated that they also used the mark-to-model method. 'Mark-to-model' refers to the practice of pricing a position or portfolio at a price determined by financial models, rather than allowing the market to determine the price.
- 94 While the majority of market participants use the mark-to-market method, some only mark their book on a weekly basis. Given the volatile nature of electricity markets, this could leave them unaware of their exposure to market risk.

Observations

The majority of market participants use mark-to-market models on the basis that a daily valuation of derivatives positions is required.

Appendix: Adoption of risk management practices

Figure 1: Mainstream practices for risk management (used by more than 50% of participants)

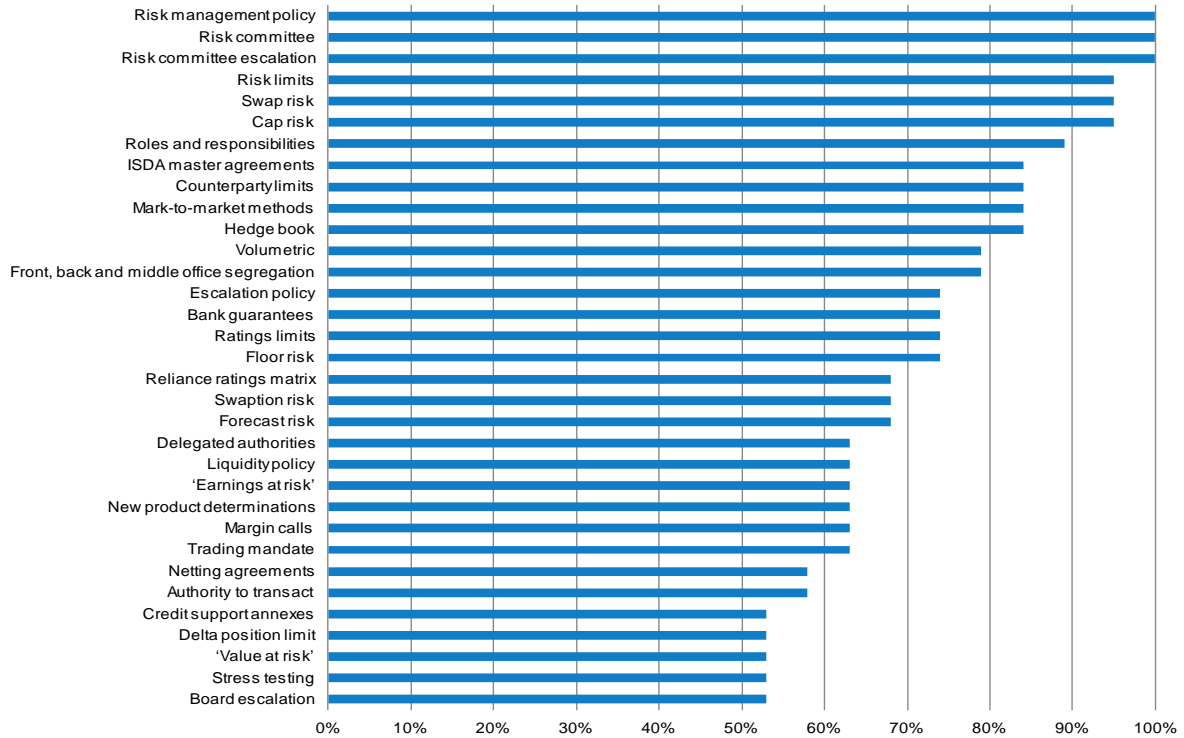


Figure 2: Conventional practices for risk management (used by 25%–50% of participants)

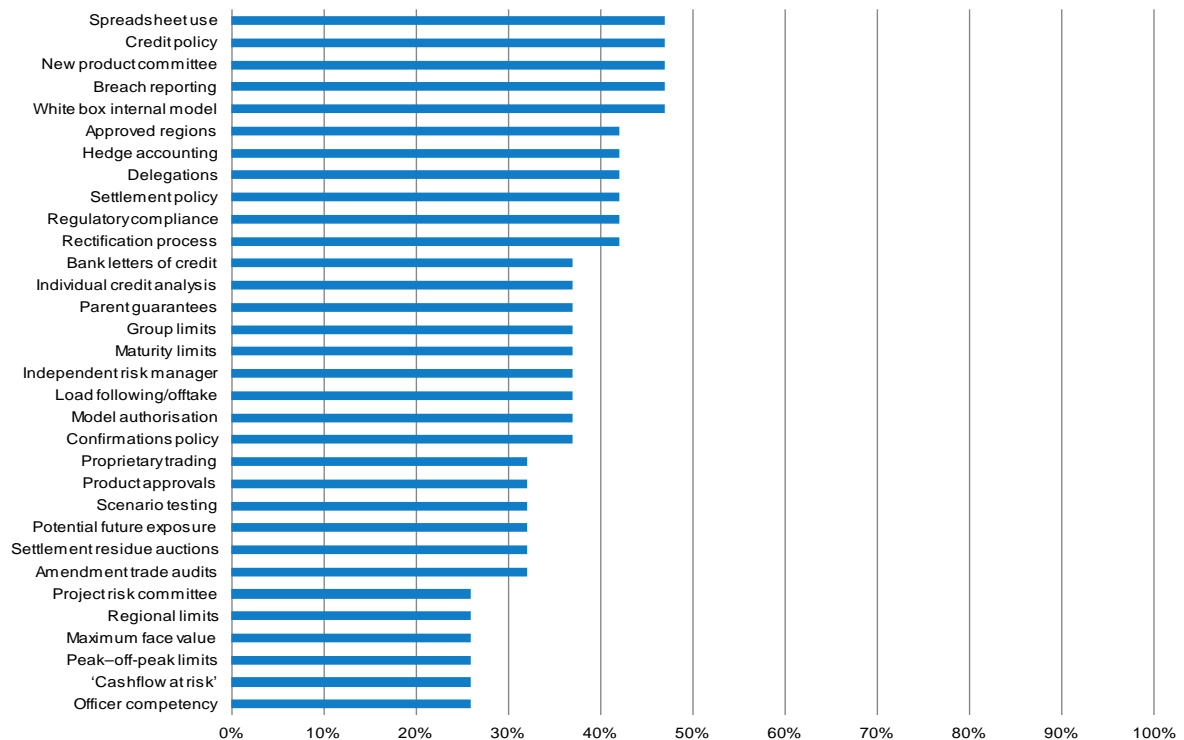
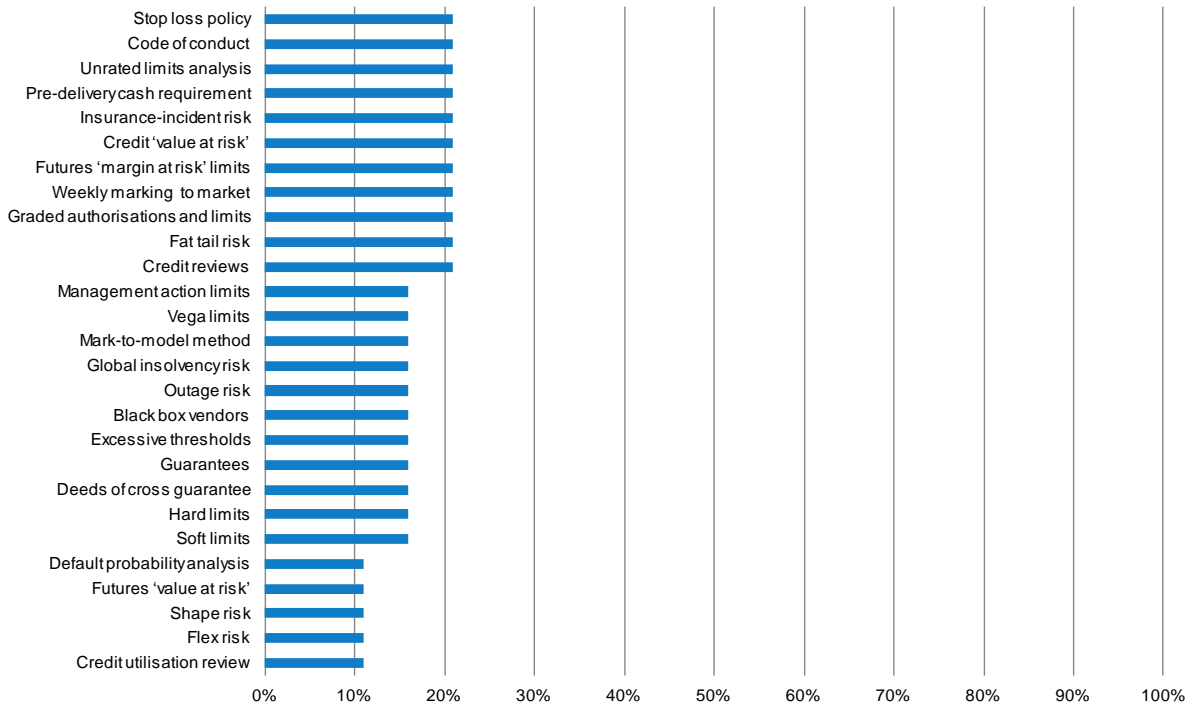


Figure 3: Distinctive practices for risk management (used by 10%–25% of participants)



Key terms

Term	Meaning in this document
AEMC	Australian Energy Market Commission
AFS licence	An Australian financial services licence under s913B of the Corporations Act that authorises a person who carries on a financial services business to provide financial services Note: This is a definition contained in s761A of the Corporations Act.
AFS licensee	A person who holds an AFS licence under s913B of the Corporations Act Note: This is a definition contained in s761A of the Corporations Act.
APRA	Australian Prudential Regulation Authority
at-risk measure	A quantitative measure of risk which includes 'cashflow at risk', 'revenue at risk', 'earnings at risk', 'value at risk' and 'futures margin at risk'
ASIC	Australian Securities and Investments Commission
BERC	Benchmark Electricity Risk Management Calculator
Corporations Act	<i>Corporations Act 2001</i> , including regulations made for the purposes of that Act
Corporations Regulations	Corporations Regulations 2001
Council of Financial Regulators	ASIC, APRA, the RBA and Treasury
credit rating agency	An agency that carries on a business of providing credit ratings in Australia
credit risk	The risk of incurring a financial loss as a result of a third party failing to fulfil its obligations to the party at risk of incurring the loss
credit support	A form of credit risk protection through the provision of cash or an undertaking to make payment.
credit support annex	An annex to an ISDA master agreement the terms of which regulate the provision of credit support for OTC derivative transactions
electricity derivatives market participant	AFS licensed entities that deal and make a market in OTC electricity derivatives in Australia

Term	Meaning in this document
ISDA	International Swaps and Derivatives Association
G20	Group of 20
mark-to-market	The practice of valuing a position or portfolio according to observable prices on frequently traded markets
mark-to-model	The practice of valuing a position or portfolio at a price determined by financial models rather than allowing the market to determine the price
OTC	Over the counter
market participant	OTC electricity derivatives market participant
RBA	Reserve Bank of Australia

Related information

Headnotes

corporate governance, credit risk, electricity derivatives market participants, market risk, operational and specific risks, OTC electricity derivatives market, prudent business practice, risk management practices, risk management documentation, risk management policy, risk management practices

Regulatory guides

RG 104 *Licensing: Meeting the general obligations*

Legislation

Corporations Act, s761A, 912A, 913B

Corporations Regulations, reg 7.6.01(m)

Consultation papers and reports

CP 177 *Electricity derivative market participants: Financial requirements*

REP 320 *Response to submissions on CP 177 Electricity derivative market participants: Financial requirements*

AEMC, *Assessing Financial Resilience in the National Electricity Market*, 8 November 2013

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Council of Financial Regulators, *Survey of the OTC derivatives market in Australia: May 2009*, 22 May 2009

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