Electricity market – settlements and prudential security review

Advice to MEUG on aspects of the EA consultation paper

NZIER report to MEUG

16 August 2013

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Key points

MEUG have asked NZIER to provide advice regarding two aspects of the proposed revisions to the prudential security and settlement arrangements for the wholesale electricity market in New Zealand. The Electricity Authority (EA) has released a consultation paper that proposes:

- Quick wins to fix various smaller issues with the existing arrangements
- Two structural alternatives targeted at improving the efficiency of the existing arrangements;
    a. Retain monthly billing but reduce perceived risks by introducing an "adder" to the price used in the prudential margin.
    b. Move to weekly billing and include the adder as (a.) above.

NZIER were asked to firstly consider whether the proposed changes are likely to provide net benefits and to assess the rationale used by the Authority for the proposal, and secondly to advise on the proposal for participants to give the clearing manager a first ranking security interest over prudential cash deposits lodged by participants with the clearing manager.

Our Views

We have some difficulty with the Authority's approach. Their problem definition appears hazy and they link the proposed changes to the prudential arrangements to the EA statutory objective rather than with the purpose and implementation of Part 14 of the Electricity Code. This situation makes it difficult to identify the criteria that could be used to assess the benefits of the changes proposed by the EA. We believe the proposed changes are not an efficient way to reduce the risk of default and do not adequately integrate the whole settlement system – that is what the clearing manager does and the Authority's interpretation of their statutory objective regarding these arrangements.

From our read of Part 14 of the Code it seems quite clear that the prudential arrangements need to ensure that market participants meet their financial obligations in the market, meaning that losses are to be avoided. This is not consistent with the Authority's statutory objective and in our view is not achievable in an efficient market.

The targeting of a probability of "loss occurring given default" (PLGD) that the proposal describes is therefore not consistent with either the purpose of Part 14 nor is it appropriate for use with the prudential arrangements that the clearing manager administers. It could be useful to the Authority as a metric of risk outcomes when they are making trade-offs between reliability, market efficiency and promoting competition that make up their statutory objective. We do not see the relevance of an adder in the makeup of the prudential margin.

The EA proposal also seems to be assuming a continuation of a one size fits all approach without considering the efficiency and effectiveness benefits of a prudential system that is tailored to the type and size of settlement risk by participant type.

Our survey of alternative arrangements identified stark differences between the arrangements in New Zealand and those in other markets, some of which have similar loss avoidance objectives.

We believe that benefits to participants from lower market risks and lower costs from their prudential arrangements are likely to come from:

- A shift to weekly billing and settlement because this will lower the risk of default, reduce the level of security the clearing manager needs to hold and reduce any barriers to entry (especially at retail) that the existing arrangements may cause.
- Setting qualifying criteria for market participants to screen out participants who are under-funded or lack risk management expertise.
- Setting maximum trading limits for participants to create more certainty for both the clearing manager and participants regarding the amount of and process for prudential security.

While our advice is high level, we find it difficult to perceive of material benefits from the proposed changes however, evidence from Australia and the US in our survey suggests that material benefits are likely to come from a restructure of the whole prudential system rather than tinkering with components of the existing arrangements.

In respect of the EA proposal for participants to provide a first charge security over the prudential cash deposits:

- We cannot identify what additional control over participants' prudential deposits or reduction in risk this security would offer to the clearing manager compared to the provisions of Part 14
- We cannot identify any evidence that a first charge security is used by either the New Zealand or Australian Stock Exchange clearing managers - our suggested comparators[1] for the electricity market clearing manager

[1] The MEUG terms of reference asked for comparison of this approach other commodity and financial markets. We suggest the use of the NZX as a comparator because the electricity market clearing manager is operated by the NZX on behalf of the EA and appears to be based on the clearing manager model used by NZX.

Contents

Figures

Tables

1. Background and scope of advice

The Electricity Authority (Authority) has been reviewing the wholesale market settlement and prudential arrangements with a particular eye on whether these arrangements are impacting retail competition and whether generators face a excessive payment risk, ostensibly because the level of security is lower than in New Zealand than in other markets.

The Authority's Wholesale Advisory Group (WAG) reported the results of their investigations into prudential arrangements to the EA Board in 2012. A detailed consultation paper was released by the Authority on 18 June 2013 with submissions on this paper closing on 20 August 2013.

The consultation paper contains two alternative "packages" of reform to the current arrangements that are aimed at reducing perceived inefficiencies associated with the clearing manager's exposure and from over and under procurement.

1.1. Scope

MEUG are of the view that the Authority's proposals include a number of "quick wins" that are of immediate benefit to MEUG but at the same time there are several matters of a more fundamental nature that need a more considered approach. They have asked NZIER to provide advice on:

- The costs and benefits, and the Authority's rationale, for the inclusion of an adder when calculating the prudential margin and the need for an increase in prudential margin.
- Whether cash deposits that are used for prudential security should be made first ranking securities in favour of the clearing manager and how this compares to practice in other markets.

1.2. Existing prudential arrangements

While a first principles review of the existing prudential arrangements is out of scope it is informative to consider the overall structure of the arrangements that are set out in Part 14 of the Code. This is because they form the basis of a comparison with the arrangements in other wholesale markets, and describe the need for and nature of the security arrangements of the clearing manager.

1.2.1. Purpose of the arrangements

In the consultation paper the Authority links the "purpose" behind the Part 14 arrangements back to the overall purpose of the Authority itself.[2] Their analysis identifies the potential for both unnecessary costs and payment risks that are in

[2] To promote competition in, reliable supply of and the efficient operations of the electricity industry for the long term benefits of consumers.

conflict with the Authority's statutory objectives. They are especially concerned with the costs to retailers and that the deposits held under the existing arrangements may be inadequate in the event of a default. These seem to us to be separate problems.

Other than these concerns the Authority does not set out specific objectives for the prudential arrangements.[3] Reference is made to "minimising the clearing managers exposure to a participant" and "problems with existing arrangements whereby over and under procurement occurs" but it is difficult to understand how these relate to the purpose of having prudential arrangements.

1.2.2. Structure of settlement and prudential arrangements

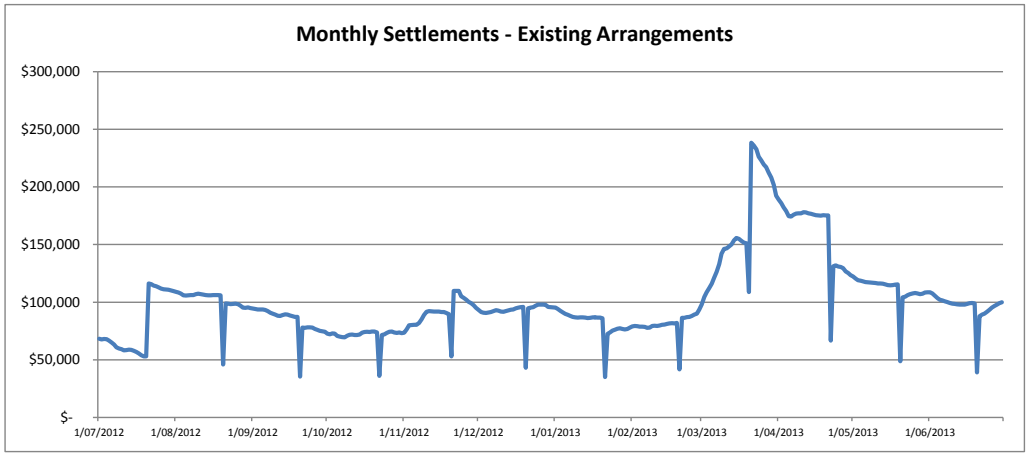
In brief the existing settlement arrangements are set up as follows;

- The wholesale market operates as a compulsory common pool with the clearing manager as the counter party to both generators and users.
- Settlement takes place on the 20th of the month following (ie: July transactions settle on 20 August).
- Settlements take place in "gross" amounts on the 20th.
- A payer failure triggers a specified Part 14 process and a specified payee priority schedule.
- The clearing manager reviews prudential levels weekly, based on participants actual electricity purchases and generation
- This process results in the clearing manager holding up to 57 days of transaction values, that is made up of up to 50 days of outstanding purchases plus a fixed 7 days of forecast purchases (to cover the exit period given default)
- The value of the forecast 7 days is calculated from a rolling average of the 21 days just gone.

If these arrangements are modelled using actual half hour prices for the period 1 July 2012 to 30 June 2013, and a standardised 24 MWh per day of demand, the value of the settlement and security requirements are as shown in Figure 1.

[3] Clause 14.2 of Part 14 merely states that the purpose is to ensure that payers meet their obligations and that the clearing manager is responsible for administering the prudential requirements.

Figure 1 Existing prudential security



Source: NZIER

The existing arrangements give rise to a certain amount of variability in the amount of security that needs to be provided to the clearing manager which is driven by various factors including seasonality, hydrology and movements in market prices. The existing arrangements have mechanisms to account for these factors, some of which are addressed in the proposal.

Part 14 does not suggest that a particular level of risk exposure is acceptable but merely specifies that a minimum level of security must be held by the clearing manager so that participants can meet their financial obligations. The clearing manager is charged with administering the prudential requirements to meet the purposes of Part 14. The consultation paper has a focus on the Authority's statutory objective from the Act which is concerned with competition, reliability and market efficiency. This appears to be inconsistent with the tightly defined purpose of Part 14. We have been unable to identify where this apparent inconsistency has been addressed by either the WAG or the Authority.

The Authority has calculated that the existing arrangements equate to a 53% Probability of Loss Given Default (PLGD) and that this situation can be improved on. Discussion of PLGD is usually accompanied by discussion of the probability of default - PD. Looking at PLGD alone makes it difficult to assess the materiality of the risk of loss. This point was described by Taylor Fry in their 2010 report to AEMO where they recommended a 2% PLGD. They were of the view that such a target could accommodate the risk of losses from smaller value/higher risk defaults but not high value/low risk defaults which would have to absorbed directly into the market as one-off's. Also the phrase improved-on should be elaborated to discuss both the effectiveness and efficiency of the proposed change in delivering the improvement.

2. Our approach

We;

- consider the Authority's rationale for, and identify the high level costs and benefits of the proposed changes to the prudential requirements, and
- review the practices of other commodity and or financial markets regarding the existence and status of cash as prudential security.

2.1. The Authority's rationale regarding benefits from a change

To evaluate the rationale and perceived benefits from the proposed changes we extended the survey beyond the wholesale markets that the Authority considered [AEMO in Australia and PJM in the US] to identify whether there are common prudential structures or systems and be able to assess how these compare with the Authority's proposal. Because the focus of their proposal is on reducing the risk of loss to market participants should a payer default, we placed particular attention on how the risk of loss given default is handled elsewhere.

Our survey also considers the benefits that may be realised from a move to weekly billing and settlement. The Authority proposal offers two alternatives for implementation – continue with the existing monthly billing and settlement or change to a weekly billing and settlement. The WAG promoted a weekly process however the Authority has suggested that the existing monthly system should be retained to minimise the potential for adverse impact on retail competition.

To further evaluate the rationale and potential for benefits from change we model the implementation mechanisms that are proposed in the consultation paper using a standardised demand profile and actual market settlement prices for the year July 2012 to June 2013.

We have taken the implementation costs that are detailed in the Authority's proposal at face value simply because their evaluation is outside of scope for this brief review.

There are wider issues that we believe are material in the consultation paper which we have not reviewed and commented on as they are outside scope of this advice. For instance in the proposal the Authority has determined to ignore wealth transfers such as working capital costs, however working capital costs can be a dead weight loss if they are inefficiently high. While we do not know whether the current or proposed levels of prudential security are most efficient what we can point to from this work is that participants will require significantly less working capital if certain aspects of the proposal are implemented.

2.2. Cash as prudential security

2.2.1. EA proposal

The EA has suggested that "Cash used for prudential must have a first ranking security interest in favour of the Clearing Manager". The EA proposal does not provide a detailed rationale for this change nor do they specify the risk problem that the change is expected to solve. The change appears to be directed at defending the priority of cash security ahead of other creditors in the event of a default by the payer.

The only major recent change in securities common law that we have been able to identify that may be relevant to the EA proposal for a first ranking security is related to the collapse of Mainzeal. In this case the court interpreted the scope of the Personal Properties Security Act 1999 (PPSA) more broadly than previous decisions so that it applied to security arrangements that arose from normal contractual arrangements. As a result it may now be necessary to better structure security arrangements that arise from contractual arrangements to ensure the priority of the security against other creditors[4].

2.2.2. What is done in other markets?

We have been asked to consider how common this practice is in other commodity markets. To answer this question in the limited time available, and in light of our guess about the motivation[5] for the EA proposal, we have considered the economic effect of this proposed change from three perspectives:

- the difference between the proposed and current rules for prudential cash requirements
- how the proposed change compares to prudential cash requirements under the clearing rules for both the New Zealand Stock Exchange(NZX) and the Australian Stock Exchange (ASX)
- the general approach to clearing and settling of large transactions in New Zealand financial markets.

[4] For a discussion of the legal aspects of the case see: The PPSA and contractual rights – new developments from New Zealand' by Chris O'Brien, Ian MacKenzie and Matthew Cunningham of Minter Ellison available from www.minterellison.co.nz/The_PPSA_and_contractual_rights/. After collapse of Mainzeal a company Hobson Gardens for which Mainzeal was completing construction work, claimed a security interest in Mainzeal equipment left on their under the terms of its construction contract with Mainzeal. The receivers of Mainzeal (appointed by the BNZ) challenged Hobson Gardens' claim to the equipment on the grounds that BNZ had a prior charge over all Mainzeal assets. The Court found that although the construction contract did create a security interest in the equipment in favour of Hobson Gardens and that this would fall within the scope of the PPSA. As Hobson had not perfected it security interest it ranked behind the BNZ security interest.

[5] The Personal Property Securities Act has been in place much longer in New Zealand than Australia and the versions of the two Acts require different approaches how the security interest could arise from a contract to provide services.

3. Our assessment

Our brief survey included the following wholesale electricity market structures, settlement systems and prudential arrangements.

Table 1 Summary of Survey

Market	Energy market structure	PLGD ?	Settlement/billing period	Trailing or forward price	Trading limit
AEMO - Australia	100% real time	Yes 2%	Weekly/5 days	forward	Yes – Maximum credit limit (MCL)
Alberta	Pool & bilateral	No	Monthly/20th next	forward	Yes – MCL
Ontario	Pool & bilateral	No	2 weekly/5 days	forward	Yes - MCL
UK	98% bilateral	No	Daily/29 days	forward	Yes
PJM	Pool & bilateral	No	Weekly/7 days	75/25 rule	Yes - MCL
NYISO	Pool & bilateral	No	Weekly/7 days	50/50 rule	Yes - MCL
ISO-NE	100% real time	No	Weekly/7 days	N/A	Yes - MCL
MISO	100% real time	No	Weekly/7 days	90/10 rule	Yes - MCL
CAISO	100% real time	No	Weekly/7 days	80/20 rule	Yes - MCL
New Zealand	Pool & bilateral	proposed	Monthly/20th next	21 day trailing	Minimum level

Source: NZIER

We have limited this high level survey to a set of high level market characteristics that describe the prudential security system that operates in each of these markets. We refer to the arrangements as a "system" because the individual components interact with each other and act to achieve the particular objectives for settlement and security.

The most recent reference material we identified was FERC Order 741[6] which took effect in October 2011 and established 7 days as the standard billing and settlement periods for the RTO and ISO entities in the US. The Commission undertook extensive research and consultation prior to making this Order which is a set of determinations that make up the revised settlement and prudential system operating in the US wholesale markets.

Other reference material that is useful in this survey is a report on a review of the prudential arrangements of the NEM in Australia that was undertaken in 2010 by Taylor Fry for AEMO. This work looked specifically at the performance of the prudential arrangements at that time, the mechanics of calculating the probabilities of loss given a participants default and made recommendations to change both the prudential standards and the settlement cycles. Taylor Fry undertook a survey of

[6] Federal Energy Regulatory Commission Order No 741 dated October 21 2010. *Credit Reforms in Organised Wholesale Electric Markets.*

international prudential arrangements and they were of a similar view that the arrangements that exist appear to be tailored to suit the characteristics of the country's wholesale market.

Both FERC, Taylor Fry's, and our surveys, identified a similar set of factors to do with the structure and operations of prudential arrangements which would result in benefits from reduced risk of losses and lower prudential costs to participants. The FERC was concerned with disruption to the market system and were of the view these benefits would result from getting the credit risk "balance" right – not too restrictive so as to limit market entry and reduce competition but not too easy so as to increase the risk of default and increase costs to consumers. They were of the view that all markets would benefit from shorter settlement timeframes, restrictions on unsecured credit and minimum criteria for market participation, amongst a number of other measures.

While the Commission's focus was on relative risk, Taylor Fry, on behalf of AEMO, had a focus on a "target" for probability of losses given a default and especially whether the historical risks of loss from default could be improved upon. They were of the view that risks could be lowered and market participants would benefit from changes to how credit limits were calculated, from the improved PLGD target, from shorter settlement periods and from increased levels of prudential requirements overall.

3.1. Use of PLGD

Other than the specific target of 2% PLGD used by AEMO, we were unable to identify whether this performance metric is a driver of the structure of prudential arrangements in other markets or is simply an arithmetic outcome that may or may not be useful when assessing the credit risks in any given market.

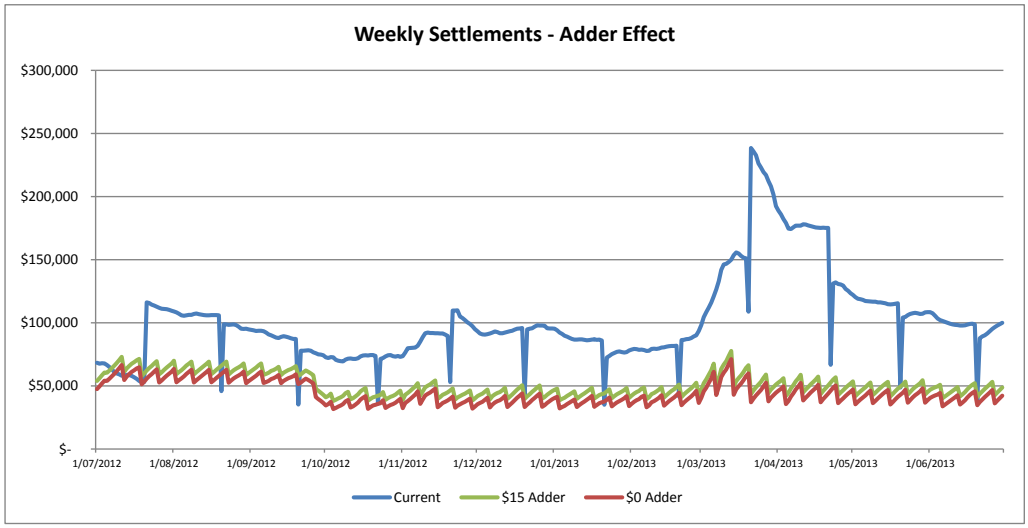
In Australia, Taylor Fry recommended that AEMO adopt a 2% PLGD on the basis that losses are an expectation in the Australian electricity market and that the risk of loss needed to be targeted. This does not appear to be the case in the US markets where clearing managers are private companies and therefore on average, losses are [generally] not expected. Consequently a PLGD target is not used. We also note that the use of PLGD standards was not mentioned in the FERC Order 741 material.

In a similar fashion to the US, the structure of the NZ clearing manager as a private exchange that is the counter-party to market transactions suggests to us that the NZX does not expect losses either, under current arrangements. Indeed, a read of the purpose of Part 14 of the Code and of the detailed settlement arrangements contained in Part 14 indicate that losses are to be avoided and the prudential arrangements are set up accordingly. This situation begs the question whether the avoidance of loss at any cost makes sense. Objectives for market efficiency and competition demand that costs should be minimised to the point where it is inefficient to do so, or until system reliability becomes compromised by retail consumers being left stranded by a default. When reading the Part 14 objective, the use of a PLGD as an absolute target does not make sense to us and for this reason we believe that its absence is unlikely to negatively impact the efficiency of the settlement system.

If however, the Authority's view the calculation of PLGD as an informative outcome metric of the performance of the prudential arrangements, with respect to their statutory objective it may well provide benefits to participants and to the clearing manager.

The effects of the "adder" will be minimal in terms of reducing the level of settlement risk compared to the benefits from lower risk and a lower security amount (working capital) that will come from a shorter settlement period, especially if the shorter period is adopted with a maximum trading limit. Figure 2 below demonstrates the effect of the adder relative to the impact of a weekly settlement period.

Figure 2 The proposed Adder



Source: NZIER

3.2. Use of Trading Limits

The NZ market operates under different trading limits than equivalent markets overseas which we believe could add to the volatility of participants' prudential security requirements and add cost to the settlement and prudential process.

Both AEMO in Australia and the System Operators (ISO's) in the US use formal trading limits for market participants that vary depending on criteria specific to those markets.

In Australia the NER specify maximum credit limits[7] for participants that are covered by a standard security mechanism [letter of credit, bank guarantee and the like]. If a participant's outstanding purchases exceed this limit additional security is required on the same day the outstanding's exceed the trading limit. In the period 2000-2010 additional security was only required on 2% of total days.[8]

[7] MCL of 42 days purchases is used by AEMO and a RMCL of 28 days purchases.

[8] Refer "The Prudential standard in the National Electricity Market" final report by Taylor Fry 4 August 2012.

Maximum trading limits also apply in the US markets. In their Order 741 FERC determined a maximum level of unsecured credit for individual ISO participants and for their corporate family should they belong to one. Order 741 also determined that ISO's need to have "tariff language" that specified a minimum participant criteria for all market participants with the aim of protecting the markets from under-capitalised participants who may also have inadequate risk management procedures in place.

All ISO's maintain maximum credit limit arrangements which establish a known prudential security level for each participant, which minimises volatility and calls for additional security. For example PJM establish a long term maximum credit limit for each participant that incorporates an allowance for current obligations [75% of maximum] and a 25% buffer to cover "cure" periods for additional security that is called at short notice and any exit period that may be required following default.

Maximum trading limits offer a number of benefits which flow from greater certainty regarding the amount of security required, less variability in working capital and from reduced incidences of calls for additional security by the clearing manager. They do however represent real costs to participants that need to be balanced against these benefits.

3.3. Settlement period

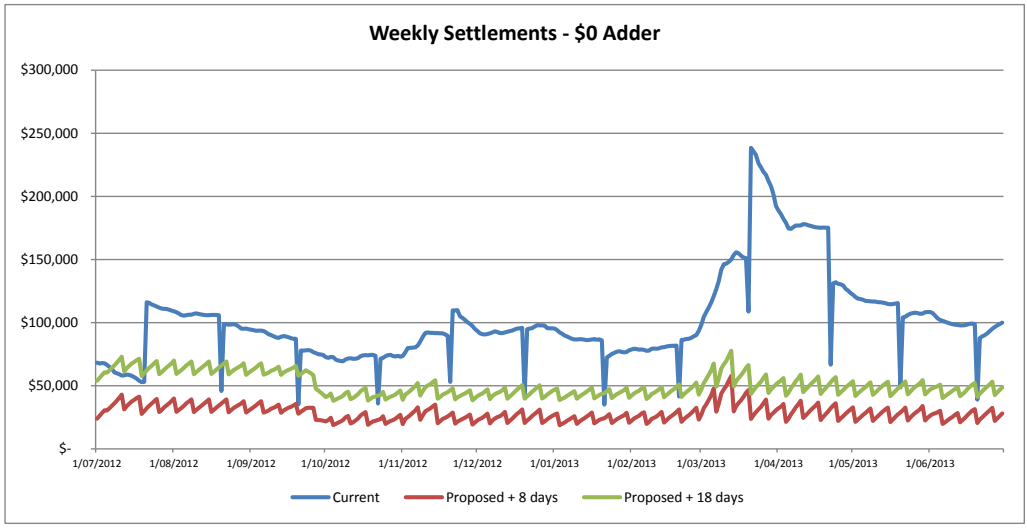
The New Zealand market is all but alone in having a monthly billing period and settlement period of 20th of the month following. Other than Alberta and Ontario in Canada the other markets in our survey have 7 day billing and settlement periods. AEMO bill each 7 days and require payment in 5 days, while the UK market settles on a daily basis but payment takes up to 29 days.

The length of billing and settlement periods is the single biggest driver of cost to participants in terms of the level of prudential security. Shorter periods mean that there are lower purchases that remain outstanding which results in benefits from lower exposure to payment risk and a smaller loss to socialise from any default. In Order 741 FERC was very clear that they viewed shorter billing and settlement periods as essential components in the package of reforms that they implemented. The final version of 741, from October 2010, includes many references to both FERC and third party research regarding the benefits from a reduced settlement period. Regarding the Authority's concerns regarding retail participation we note this data included evidence from ISO-NE which indicated that the number of market participants increased 60% following the introduction of weekly billing and settlement, as well as evidence from PJM that their exposure to credit risk would be reduced by 68% following the change to weekly billing.

The significance of the move from current arrangements to the WAG sponsored weekly settlement proposal [including either 8 or 18 days exit period] is demonstrated in the following chart. We use EA supplied price data and have modelled a nominal load of 1MW in each half hour, total 24 MWh per day.

The level of security required reduces by 70% in the case of an 8 day exit period and 50% for the 18 day case which is in line with evidence published in US and is consistent with the 60% reduction in risk noted by Taylor Fry in their analysis of this option for AEMO.

Figure 3 Weekly settlement vs existing



Source: EA NZIER

Given that we believe the use of an adder is inconsistent with the purpose of Part 14 and that it is likely to deliver minimal benefits, we have set it at zero.

3.4. Current electricity market clearing rules

The following comments on the effect of Part 14 on the control over the application of cash are our opinion only and do not constitute legal advice on the effect of the current Part 14 on control over the use of funds deposited by participants in the accounts with the clearing manager.

The current rules[9] for the operation of the electricity market require participants (payers) to deposit cash with the clearing manager to meet prudential requirements. In our opinion the economic effect of these rules seems to be to place the cash deposit under the control of the clearing manager for the purpose of covering payment defaults by the payer and we find it difficult to understand how either:

- a first ranking charge over the deposit in favour of the clearing manager would strengthen the control the clearing manager already has over payment of money from the account, or
- a participant can give a first ranking charge over cash they have already in the clearing managers account when they have relinquished control over how the funds can be used.

The cash deposits are to be paid into accounts operated by the clearing manager effectively as trust accounts. (Section 14.7.3 requires the clearing manager to deposit the cash into bank accounts and obtain acknowledgement form the bank that the cash deposits are held on trust for the purpose covering default by the payer using the process described in section 14.9.)

Under clause 14.9(c) the payer is not entitled to receive back any part of its cash deposit, other than in accordance with clause 14.9(b), 'irrespective of whether the

[9] Electricity Industry Participation Code 2010, Part 14, Clearing and settlement

payer is in liquidation, receivership, or subject to statutory management or other analogous situation'.

The only references to the Personal Property Securities Act in Part 14 appear to be in the following sections:

- 14.5(a) *'…pay a cash deposit, of the amount required by clauses 14.18 to 14.22, into the cash deposit accounts or to the clearing manager and provide and maintain an acceptable payer's security agreement in respect of that cash deposit and 14.6 (4).'*
- 14.6(4) '*..For the purposes of clause 14.5(a), "payer's security agreement" means a security agreement as defined in the Personal Properties Securities Act 1999 securing the payment and performance of the obligations of the payer to the clearing manager under this Part on terms approved by the Authority.'*

These clauses do not describe the type of security required and do not indicate that the existing Part 14 rules considers the effect of the PPSA on the clearing manager's ability to retain control over collateral provided by participants in the event of the participant being placed in 'liquidation, receivership, or subject to statutory management or other analogous situation'.

Based on the above analysis our sense is that the proposal does not clearly define the problem that requiring a first ranking security interest would solve that is not already addressed by the existing arrangements and also does not explain how the proposed change would be effective in reducing the risk of participant default.

3.4.1. NZX and ASX clearing manager rules

The closest comparators to the clearing rules for the electricity market are the NZX and the ASX. Both the NZX and ASX operate established clearing management operations for trades completed in their markets and require market participants to hold collateral with the clearing manager to cover the exposure of the clearing manager to default by the participant.

Our brief review of the clearing rules for these two markets suggest that these clearing managers approach to holding of cash deposits from participants for prudential purposes is similar to the current approach in Part 14 but also does not provide any indication that these clearing managers require a separate first ranking security interest in the cash deposits held in trust for participants. In particular:

- the NZX rules[10]:
  - define[11] 'Money Collateral' which are deposits by participants into account controlled by the clearing manager as 'Transferred Collateral'
  - gives full control[12] of the 'Transferred Collateral' to the clearing manager by *'transferring absolutely (and not by way of security)'* the

[10] 'NZ Clearing Limited, Clearing and Settlement Rules',3 August 2010,NZClering Corp available at www.nzx.com/files/static/Clearing_and_Settlement_Rules.pdf

[11] See NZ Clearing Limited Rule 3.12.5, p93 '

[12] See NZ Clearing Limited Rule 3.12.7, p94

participants '*right title and interest to or in respect of*' the 'Transferred Collateral' to the clearing manager

  - only mentions the PPSA in the definitions and under rule 7.9.4 – which requires the parties to contract out of a handful of provisions of the PPSA that relate to notification of a sale of security and the ability of the debtor to re-instate the security arrangement after default by repaying the debt

- the ASX rules[13]
  - requires[14] participants to establish accounts with ASX Clear
  - defines[15] the cash cover credited to the participant in the ASX Clear account as the '*absolute legal and beneficial property of ASX Clear'.*

3.4.2. Approach to clearing and settlement in NZ

The clearing and settlement activity of the electricity market is a subset for the clearing and settlement processes for financial and securities markets in New Zealand. In the NZ market these services are provided in the following ways:

- Payment services are provided by through a combination of the Reserve Bank of New Zealand systems NZ Clear for high value payment and settlement between the registered bank using their ESAS accounts with RBNZ, and registered bank systems for retail and wholesale payments made by their customers.

  Payments from ESAS accounts are only permitted if the account has sufficient funds available, are made in real time and are irrevocable.

  The registered bank owned and operated payment services companies provide messaging and processing services but do not carry any value for the transactions processed. They do not operate as central counterparties. The participant banks intermediate the positions and carry the risk of the financial transactions.

- Securities settlement services are provided through two main systems; NZClear operated by the RBNZ and NZCDC operated by a subsidiary of NZX. The NZClear system allows members to settle fixed interest and equity transactions and make cash transfers and is a real time settlement system. The NZCDC system is used to clear and settle trades in NZX markets.

The payment systems described above are charged with fast and reliable transfer of value between participants in real time to limit the exposure of one participant to default by another participant. The securities settlement systems described above need to enable trading between participants and exchange of value but solve this problem either through real-time transaction between members or by interposing a clearing manager.

[13] ASX Clear Operating Rules, Section 10, 7 June 2013, available at http://www.asxgroup.com.au/media/PDFs/asx_clear_section_10.pdf

[14] See Rule 10.1.1 of ASX Clear Operating Rules, Section 10, p1

[15] See Rule 10.3.1 of ASX Clear Operating Rules, Section 10, p4

Interposing a clearing manager changes the nature of the transactions from 'between participants' to 'between each participant and the clearing manager'. This means the clearing manager is exposed to default by each participant but each participant is only exposed to default by the clearing manager. To manage this risk the clearing manager has to hold collateral from each participant against its exposure to that participant. A clearing model would seem to add the most value where there a large number of parties making many transactions so that there are economies of information and scale in having a single manage and assess the creditworthiness of counterparties and manage settlement risk with each party rather than each participant making this assessment for every counterparty.

This brief description of payments systems and clearing systems suggests issues that should be considered for defining the 'market clearing and settlement' problem that the EA is attempting to solve and the most efficient allocation of settlement risk. We suggest that MEUG consider the following:

- how well does the number of players in the electricity market and the one-way nature of most member transactions (mostly paying for supply) match the conditions for which a clearing manager is the best solution
- how the requirement for prudential deposits could be reduced by MEUG members making more frequent payments (analogous to the logic for real time gross settlement of high value transactions.