

Shorter NEM Settlement Cycle

Discussion Paper
MCE Financial Markets Working Group

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1 Introduction

In February 2008, the Standing Committee of Officials (SCO) of the Ministerial Council on Energy established the Financial Markets Working Group (FMWG) to consider, among other things, the scope for integrating electricity spot and forward markets in order to reduce prudential costs for market participants.

At its first meeting on 25 February 2008, the FMWG noted, on the advice of the ASX, that improved integration of the spot and forward markets is likely to require the NEM settlement cycle to be shortened. Currently, the spot market is settled approximately four weeks after the end of a billing period¹, giving rise to significant credit support and prudential requirements. The FMWG therefore requested NEMMCO to prepare a paper for discussion within the group, exploring the mechanics of using a shorter spot market settlement cycle in the NEM. This is a subsequent version of the discussion paper, which includes input from FMWG members.

The paper describes in section 2, the mechanics of the current NEM settlement cycle and lists some of the issues that have been experienced from the use of that process since NEM commencement. Section 3 then explores two options for shortening the spot market settlement cycle, the first being a shorter weekly cycle, and the second a daily settlement cycle. The financial and prudential implications for Generators and Market Customers are estimated for each of these options. The paper does not seek to promote either of the shorter settlement cycles, nor does it purport to have carried out a benefit / cost assessment adequate to support policy recommendations on the options.

¹ A billing period is a 7 day period starting at midnight on a Saturday – it is the week in which the energy was physically generated and consumed.

2 Current Spot Market Settlement Process

The spot market settlement and associated prudential management processes for the NEM are set out in the National Electricity Rules. The spot market is settled on the 20th business day (4 weeks) after the end of the billing period in which the energy was generated and consumed. This effectively establishes generators as credit providers for the interim period. This delayed settlement is a major contributing factor to the large amounts of credit support required by the NEM.

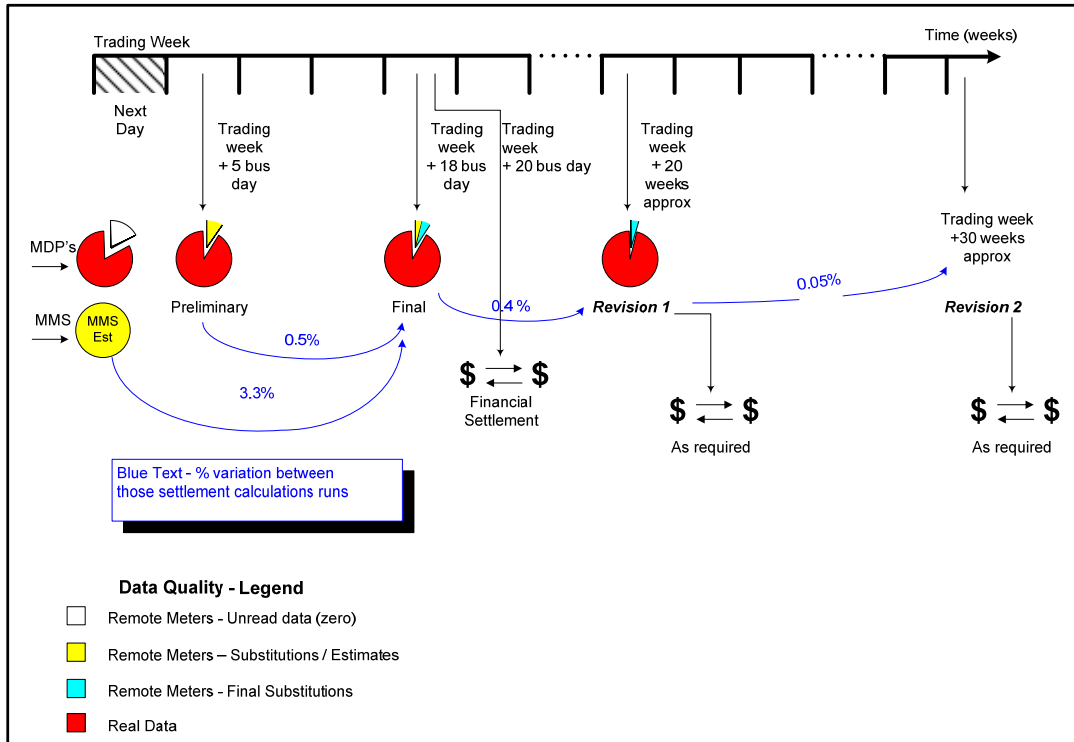
The settlement process consists of the following steps, which are shown diagrammatically in Figure 1:

- Each trading day, NEMMCO calculates the spot market outstandings relating to each market participant, using estimates of metered volumes derived from NEMMCO's market management systems (MMS).
 - These estimated outstandings are used only for prudential management purposes. Any participant with outstandings exceeding their trading limit (typically 84% of the bank guarantee lodged with NEMMCO) is required to address the matter immediately to avoid being issued with a call notice². Call notices would generally be issued by 12 noon (Sydney time) on that day and require the total outstandings to be reduced to the participant's "typical" accrual level, which could be 20-30% of the trading limit. A number of measures are available to participants to address a trading limit breach, including increasing the bank guarantee lodged with NEMMCO, lodgement of an adequate security deposit (cash), or registration of a reallocation transaction that reduces the participant's total outstandings. NEMMCO's experience to date is that all of these measures are used by participants.
- A preliminary settlement statement is prepared and sent to market participants on the fifth business day (typically Friday) immediately following the end of the billing period. As noted above, the billing period is from Sunday to Saturday.
- Generation and consumption data for the preliminary statement is primarily sourced from Meter Data Providers (MDPs), but a small amount of data is estimated.
- A final settlement statement is sent to market participants 18 business days (nearly four weeks) after the end of the billing period.
 - On average, the payment amount in final settlement statements varies from that of initial statements by about 0.5%, due to estimates being replaced by actual meter data;
 - Similarly, final statements vary from the 'next day' estimates of participant outstandings by around 3.3% on average.
- The amounts on the final statement are transacted 20 business days (four weeks) after the end of the billing period.
 - Payments to NEMMCO must be made by 10:30am on settlement day to avoid triggering a default event under the National Electricity Rules;
 - If no default occurs, NEMMCO makes payments to creditors by 2pm on settlement day subject to the entry of matching transactions into Austraclear by the relevant participant;

² Full details of NEMMCO's prudential management regime can be found in the NEM Settlement Prudential Supervision Process at: <http://www.nemmco.com.au/settlements/530-0055.pdf>

- If a default occurs such that NEMMCO is short of funds for settlement, NEMMCO would make reduced payments to participants by 4pm on settlement day.
- A revised settlement statement that picks up any changed inputs such as metering data is routinely issued 20 weeks after the billing period – on average the payment amounts in these statements vary from final statements by about 0.4%.

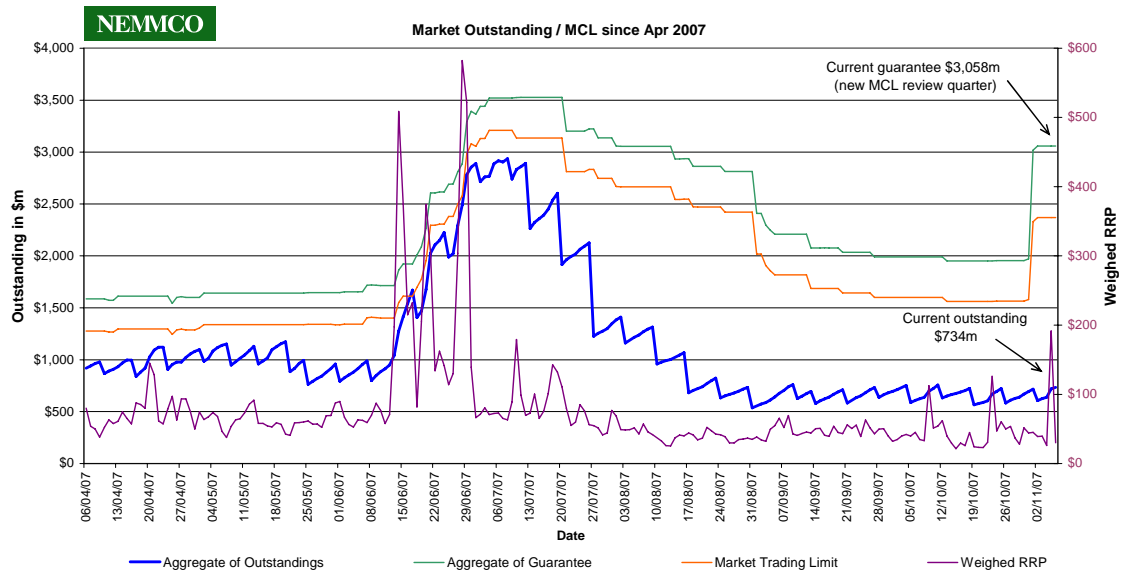
Figure 1: Current NEM Settlement Process



- A second revised statement is issued 30 weeks after the billing period – changes in that statement vary from the 20 week revised statement by around 0.05% on average.
- It is understood that settlement of much of the OTC contract market (that portion operating under ISDA master agreements) takes place on the same day as spot market settlement, but at a later time in the day.
 - ‘Circular’ money flows can occur at this point if a high price event occurred during the billing week, because retailers have paid NEMMCO, NEMMCO has paid generators, and the settlement of financial contracts may result in generators paying differences back to counterparty retailers.

A graphical representation of the cash flows and associated credit support requirements experienced in the current settlement process is shown in figure 2. This representation is at the overall NEM level for the 2007 calendar year, which has been used to show the impact of the high spot price period that occurred in June 2007.

Figure 2: Weekly Spot Market Settlements 2007 (Source: NEMMCO)



2.1 Issues arising from the current settlement cycle

Experience with the current NEM settlement cycle has illuminated a number of issues that stem either directly or indirectly from its design and operation, including the following:

- The 20 business day period between the generation / consumption of energy and cash settlement, results in the need for credit support to cover that full period plus an additional period for administration of the prudential regime. That amount of credit support can be very large if high spot prices impact the process. The resulting prudential risk increases the likelihood of prudential default, and also acts as a potential barrier to entry for small participants;
- There are limited means of recognising the offsetting contract market positions that participant may hold, and there is very limited take-up of the currently available reallocation mechanism that was designed to assist in netting off financial and spot market transactions. This, in combination with the 20 business day delay before cash settlement (noted above) increases the prudential risk for retailers;
- The transaction costs resulting from the ‘circular’ cash flows that occur at the time of settlement represent a cost to retailers, and efficiency loss to the NEM. More precisely, this relates to retailers paying NEMMCO, then NEMMCO paying generators, and finally generators settling OTC contracts with retailers, whereby a material portion of the cash flowing in the first two steps is offset in the third, resulting in efficiency loss through transactions costs.
- The transaction costs resulting when a retailer is operating near its trading limit with NEMMCO. In these situations retailers might pay cash to NEMMCO each day to address the previous day’s spot trading. The retailers however do not get reimbursed for the high pool prices under their OTC contracts for up to another 5 weeks. The retailers are required to finance this early payment, which adds to both transaction costs and default risk.

Two options for shortening the NEM settlement cycle, including the settlement of OTC contracts, are explored in sections 3.1 and 3.2. Both of the options have potential to improve the issues listed above to different degrees. A range of variants from these

options could also be constructed to modify the attributes of the outcome, but the two options described below give some perspective on the matter. A summary of the implementation considerations in moving to a shorter settlement cycle is provided in Table 1.

3 Options for Shortening the NEM Settlement Cycle

There may be a number of ways in which the NEM settlement cycle could be shortened or effectively shortened. NEMMCO currently issues a preliminary settlement statement on the fifth business day (typically Friday) following each trading week. Stakeholders then reconcile the preliminary statements with NEMMCO before cash settlement takes place a further three weeks later.

As noted above, current experience is that changes between of the preliminary and final settlement statements are relatively small (around 0.5%), indicating that it may be feasible to settle on the basis of preliminary statements, and use the 20 week and 30 week routine adjustment periods to manage the necessary adjustments. Such a change would reduce the period for which credit support is provided from 42³ to 19 days – it could therefore reduce NEM credit support requirements in both the spot and financial OTC markets by up to 55%. Based on the broad assumptions set out in appendix A, this could translate to an approximate annual cost savings of up to \$4m for an “average” priced year.

A second option would be to settle the market on a daily basis, such as two days after physical operation (T+2 settlement). This would change the period for which credit support is required from the current 42 days to 9 days – ie a reduction of up to 79% in credit support, which could translate to an annual cost saving of up to \$6m based on the assumptions in appendix A.

The cost savings are additional to the reduction in risk faced by NEM participants in order to satisfy the NEM prudential process during high priced periods.

One implication of changing the settlement cycle that needs specific attention is that a shorter settlement cycle would reduce the period over which generators are required to provide credit to retailers, but without directly changing the payment stream that retailers receive from consumers. This would effectively result in a shift of working capital from retailers to generators in proportion to the reduction in credit period. Rather than being an efficiency change, this outcome could be characterised as a transfer of wealth, or alternatively as redressing an existing transfer to retailers that is created by the current delay in settlements taking place.

When considered across the supply chain, retailers currently provide consumers with credit for between 4 and 12 weeks’ electricity usage⁴. This is currently partially offset by the wholesale settlement period of about 4 weeks, so that a proportion of consumer credit is provided by each of the generator and retailer groups. Shortening the settlement cycle would concentrate this provision of consumer credit with retailers. The financial effects of this outcome may be offset to varying degrees by the reduction in NEM prudential requirements. The degree of financial offset for a particular retailer would be dependent on the cost faced by that retailer for the procurement of credit support.

The options for shortening the NEM settlement cycle might include a shortened weekly settlement cycle as discussed in section 3.1, or a daily settlement cycle that is only two days in arrears as detailed in section 3.2. Clearly, variations of these options would also be possible, for example a daily cycle that is four days in arrears may allow greater use of revenue quality metering for the initial cash settlement transaction. Section 3.3 also considers briefly the

³ Currently, MCLs for the NEM are calculated over a credit period of 42 days. This is made up of the 7 day billing period, the 28 day period until payment occurs, and a 7 day reaction time during which the default process may need to be applied to suspend the participant. Full details of the “Method for determining Maximum Credit Limits” can be found at: <http://www.nemmco.com.au/settlements/530-0019.pdf>

⁴ The rollout of smart meters has potential to change the balance of credit provision between retailers and generators by allowing retailers to bill more often than quarterly.

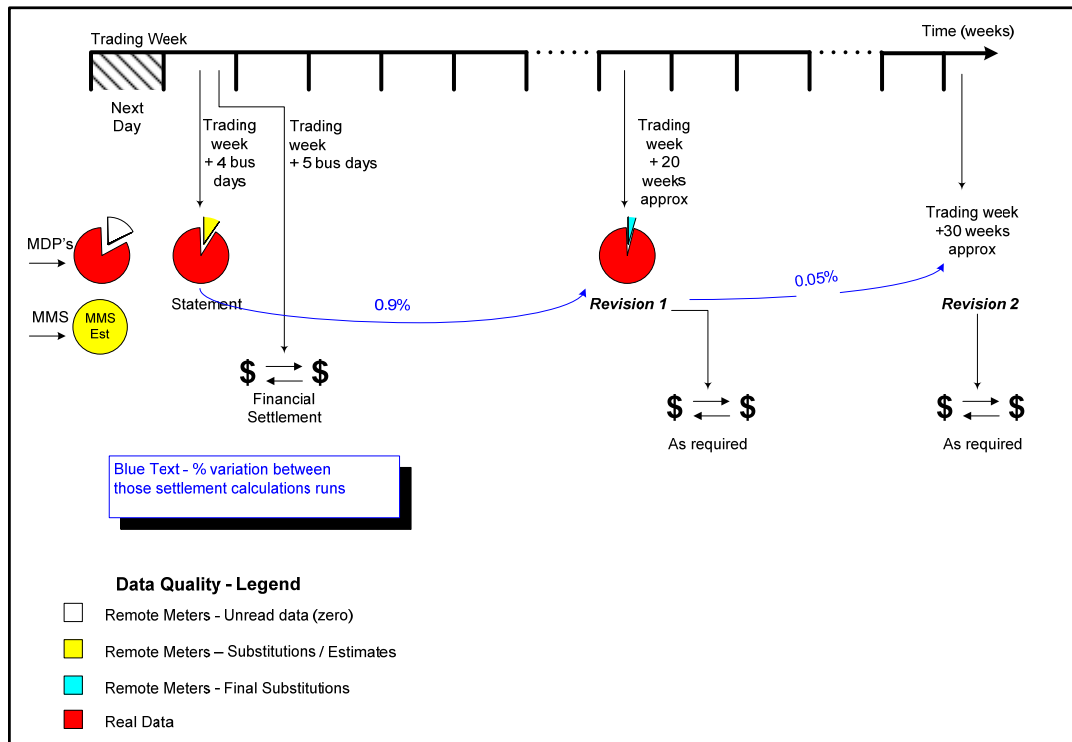
effects of changing the balance between the use of bank guarantees and daily margining in the spot market – there is currently some flexibility in this regard through the reduced MCL process. These matters are developed in greater detail in the following sections.

3.1 Shortened weekly settlement cycle

The detailed design of a shortened weekly settlement cycle remains to be developed, but it is anticipated that the following attributes would be a reasonable starting point for initial consideration – see also Figure 3:

- Daily outstandings would be assessed against prudential requirements using estimated generation and consumption figures as at present. The prudential regime would however, need to be revised to suit the shorter settlement cycle.
- Settlement statements covering a full one week billing period would be issued typically each Thursday, 4 business days following the end of the billing period – one day earlier than current practice for issue of preliminary statements.
 - Settlement would take place typically on the Friday, 5 business days after the end of the billing period. Therefore, cash settlement would occur on the basis of the initial statement issued, and there would be no reconciliation based on preliminary statements.
- Routine revised settlement statements would continue to be issued 20 and 30 weeks following the billing period, as at present.
- The value of adjustments passing through the 20 week revised statements would increase from the current 0.4% to around 0.9% to pick up the adjustments currently being processed between preliminary and final settlement statements.
- Changes to the spot market settlement cycle would require changes to the National Electricity Rules. No requirement has been identified so far for changes to be made to legislation.
- If the spot market settlement cycle was changed as described here, it is understood that settlement of OTC contracts based on the ISDA master agreement would also change to follow the same cycle due to linkages with the spot market timetable built into the master agreement. This would need to be confirmed. Subject to confirmation, this would indicate that a material improvement in integration of spot and OTC markets would be delivered by shortening the settlement cycle alone, as both markets would be settled with less delay than at present.

Figure 3: Shortened Weekly Settlement Cycle



As noted in section 3, shortening the NEM settlement cycle to be weekly, one week in arrears offers the opportunity to reduce spot market credit support requirements by up to 55%. Perhaps more important though, is the reduction in prudential risk experienced by a hedged retailer during an episode of very high spot prices. Reallocated generators, or generators that experience plant failure may also benefit through reduced prudential risk to NEMMCO.

Balancing these benefits however, is the reduced credit period available to retailers under a shorter settlement cycle. Under the current settlement process, retailers are afforded a period of 20 business days (4 weeks) from the end of the billing period before they are required to pay their wholesale obligations. Under the shortened weekly settlement cycle, this period would be reduced to 5 business days (1 week), giving rise to a 21 day reduction in the credit period provided to retailers for wholesale payments. This could give rise to cash flow issues for retailers, and will give rise to costs (either lost opportunity or cash flow management costs) related to the cost of the lost working capital.

The net cost to retailers of this wealth transfer might be estimated as follows:

- The cost of working capital for retailers would increase by the cost of financing 21 days' wholesale energy payments at whatever rate the retailer could access. Alternatively, if cash was on hand there might be an opportunity cost associated with the benefit foregone of the cash being invested for the 21 days. For the purpose of this estimate, a rate of 5% is assumed (cf cash rate of 4.25% at time of writing). The annual cost would therefore be $5\% * 21 / 365 = 0.29\%$ of annual wholesale spot market payments. This is a cost to retailers, but at the market level it is a wealth transfer to generators, who will experience a corresponding benefit.
- The offsetting effect of savings from reduced MCL requirements can be estimated as follows:

- the cost of credit support required under the current MCL and settlement regime could represent around 0.27% of annual wholesale payments assuming a cost of credit support of 1%⁵;
- If reducing the settlement cycle to one week in arrears gives a maximum 55% saving on credit support costs (see section 3), then the saving would be around 0.15% of annual wholesale payments. This would be a saving to retailers and also a direct saving in NEM productive efficiency.
- The net cost to a retailer such as this, of moving to a shorter settlement cycle one week in arrears, would therefore be 0.29% – 0.15% = 0.14% of their annual wholesale payments (based on the above financing rates).

It was noted during discussion within the FMWG that the cost of credit support can vary materially between retailers, depending on such matters as company ownership structure, ownership of assets and credit rating. Some parties noted that banks might charge a high rate for the guarantee as well as require a cash deposit as security, increasing the overall cost significantly. To recognise the range of potential charges for credit support retailers might need to deal with, Table 1 presents the net cost or saving of the shorter weekly settlement cycle for various levels of credit support cost, using the same approach as is developed above.

Table 1: Net cost to a retailer of shortened weekly settlement cycle⁶

Price of Guarantee	Saving in credit support	Cost of early payment	Net Cost
0.50%	0.07%	0.29%	0.21%
1.00%	0.15%	0.29%	0.14%
1.50%	0.22%	0.29%	0.07%
2.00%	0.29%	0.29%	0.00%
2.50%	0.37%	0.29%	-0.08%
3.00%	0.44%	0.29%	-0.15%
3.50%	0.51%	0.29%	-0.22%
4.00%	0.58%	0.29%	-0.30%
5.00%	0.73%	0.29%	-0.44%
6.00%	0.88%	0.29%	-0.59%
7.00%	1.02%	0.29%	-0.74%
8.00%	1.17%	0.29%	-0.88%
9.00%	1.32%	0.29%	-1.03%
10.00%	1.46%	0.29%	-1.17%

Based on the figures in Table 1, and noting the qualifiers below, retailers that can access their credit support at a cost of less than 2% might experience higher overall costs under a shorter weekly settlement cycle, while retailers paying more than 2% for credit support would experience a saving.

It is important to note that the above estimates do not, of themselves, constitute a benefit / cost assessment, which would need to separate out transfers of wealth and weigh up the full range of market impacts of the change. Also, the savings estimated above must be considered a maximum assessment as the MCLs which determine a reasonable worst case exposure to NEMMCO may not be able to be reduced purely in a linear fashion with the

⁵ Calculated as $(42 / 365 \text{ days}) * (2.1 \text{ VF}) * (1.1 \text{ for GST}) * 1.0\% = 0.27\%$, assuming that the MCL is calculated over 42 days because the participant is not using the reduced MCL regime; that spot price volatility is 2.1 and the cost of credit support is 1% for this participant.

⁶ Note that Table 1 is to be read in conjunction with the approach described above it and the qualifiers below it.

time period of exposure. In addition some 70% of the market has taken up reduced MCLs, with a corresponding obligation to manage to a lower trading limit, which in turn reduces their credit support obligations. Other factors that would need to be taken into account in weighing up a decision on settlement cycle include:

- Reduced risk of retailer prudential default during high priced periods;
- Reduced prudential risk for reallocated generators, and generators that have suffered physical plant failure;
- Reduced barrier to entry for retailers due to lower up front prudential requirements;
- Reduced cost of providing short term security deposits with NEMMCO during high price periods while waiting for OTC contracts to settle some 5 weeks later;
- The effect that reduced costs and reduced spot market payment risk might have on the risk premiums generators price into OTC contracts, or reduced prudential requirements being attached to OTC agreements; and
- Potentially greater liquidity in capital markets with capital freed up from within balanced portfolios for further investment in the energy sector.

There is also an argument that generators would pass the 0.29% benefit, or portion of it back to retailers – perhaps as reduced risk premiums in OTC contracts or as reduced spot market prices due to the effects of competition. The merits of this argument and the relative ability of generation and retail sectors to source competitive finance arrangements may be important considerations in assessing whether change is appropriate.

3.2 Daily Settlement Cycle: T + 2 days

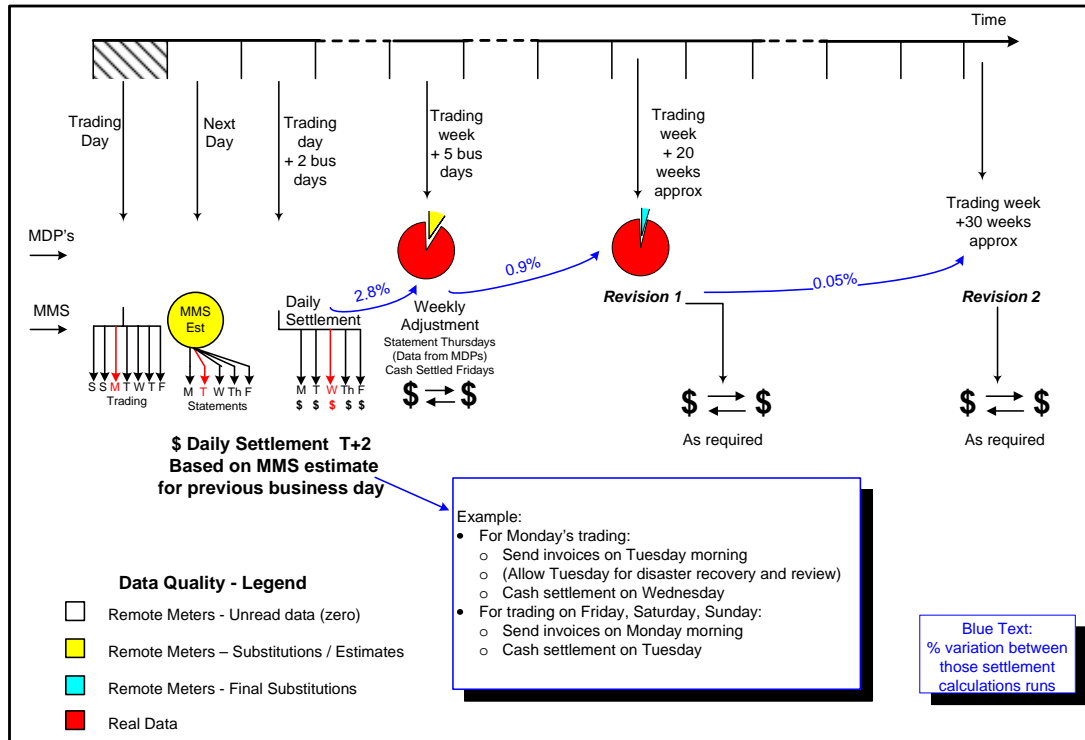
It may be possible to shorten the NEM settlement cycle further to provide for daily settlement as described below and in Figure 4:

- Spot market outstandings would be calculated each morning for the previous business day and any intervening public holidays. To facilitate the speed of this calculation, estimated generation and consumption values would be used in the same way as they are used to calculate estimated outstandings for prudential purposes at present. The main source of these estimates would be the MMS, which makes considerable use of SCADA data rather than revenue metering.
- Settlement statements would be issued daily for the preceding business day, and would also cover any intervening non-business days such as weekends because it is unlikely that cash transfers could take place on non-business days. These settlement statements would be based on the estimated outstandings noted above.
- Cash settlement would take place on the business day following issue of the settlement statement. There would be no reconciliation at this stage of the process due to the timeframes involved, but opportunities for reconciliation and adjustment would follow. On that basis, payment in accordance with the daily settlement statements would need to take place regardless of any differences of view as to the correct amounts to be paid.
 - Based on this cycle, the settlement statement that is issued on a Monday would typically include the previous Friday as well as the Saturday and Sunday. Payments occurring on Tuesdays would therefore typically be greater than the payments occurring on other days due to the inclusion of weekends.
- An Initial Adjustment Statement could be issued each week, 4 business days after the end of the billing week – ie it would normally be issued on a Thursday. The

Initial Adjustment Statement would make use of metering data from MDPs wherever possible to replace the MMS based estimates used in the daily settlement statements. Based on current experience, this adjustment would be expected to transact around 2.8% of gross settlement, and would be based on the same data as the initial settlement in the shortened weekly cycle discussed in section 3.1.

- The remainder of adjustments would be dealt with in the routine 20 week and 30 week adjustments, which would be expected to transact similar volumes to the shortened weekly cycle.

Figure 4: Daily Settlement Cycle ... T + 2 days



In a similar vein to the discussion in 3.1 above, the shorter daily settlement cycle would result in a transfer of wealth from retailers to generators, which is offset to varying degrees by productive efficiency gains, depending on the cost of credit support faced by individual participants. In this case, settlement would take place 2 business days after the trading day, compared to the current average of 31 days after the trading day. The net position for retailers could be estimated as follows:

- The cost (or lost opportunity cost) of working capital for retailers would increase by the cost of financing 29 days' wholesale energy payments by the retailer. Again using a rate of 5%, this would amount to a cost of $5\% \times 29 / 365 = 0.40\%$ of the retailers' annual wholesale payments.
- The offsetting effect of savings from reduced MCL requirements can be estimated using the same approach as in section 3.1 above, but based on a maximum of 70% saving in credit support costs. The saving comes out to be $70\% \times 0.275\% = 0.19\%$ of annual wholesale payments, assuming a cost of credit support for this participant of 1%, as in section 3.1.
- Retailers would therefore experience a net cost of moving to T + 2 settlements of $0.40\% - 0.19\% = 0.21\%$ of the retailer's annual wholesale payments.

In the same vein as Table 1, Table 2 sets out the estimated net cost or saving for the daily (T+2) settlement cycle for various levels of credit support cost, using the same approach as is developed in the points above.

Table 2: Net cost to a retailer of daily (T + 2) settlement⁷

Price of Guarantee	Saving in credit support	Cost of early payment	Net Cost
0.50%	0.09%	0.40%	0.30%
1.00%	0.19%	0.40%	0.21%
1.50%	0.28%	0.40%	0.12%
2.00%	0.37%	0.40%	0.03%
2.50%	0.47%	0.40%	-0.07%
3.00%	0.56%	0.40%	-0.16%
3.50%	0.65%	0.40%	-0.25%
4.00%	0.74%	0.40%	-0.35%
5.00%	0.93%	0.40%	-0.53%
6.00%	1.12%	0.40%	-0.72%
7.00%	1.30%	0.40%	-0.91%
8.00%	1.49%	0.40%	-1.09%
9.00%	1.67%	0.40%	-1.28%
10.00%	1.86%	0.40%	-1.46%

Based on the figures in Table 2, and noting the qualifiers below, retailers that can access their credit support at a cost of less than 2% might experience higher overall costs under a daily settlement cycle, while retailers paying more than around 2% for credit support might experience a saving. This is a very similar result to that obtained for a shortened weekly settlement cycle in section 3.1.

As was the case for the shorter weekly settlement cycle, other factors that would need to be taken into account in weighing up any decision include:

- Reduced risk of retailer prudential default during high priced periods;
- Reduced prudential risk for reallocated generators, and generators that have suffered physical plant failure;
- Reduced barrier to entry for retailers due to lower up front prudential requirements;
- Reduced cost of providing short term security deposits with NEMMCO during high price periods due to the 5 week delay in settlement of OTC contracts; and
- The effect that reduced costs and reduced spot market payment risk might have on the risk premium generators price into OTC contracts, or reduced prudential requirements being attached to OTC agreements.

As noted above, there is also an argument that generators would pass the 0.40% benefit, or portion of it back to retailers – perhaps as reduced risk premiums in OTC contracts or as reduced spot market prices due to the effects of competition. Again, the merits of this argument, and the relative ability of generation and retail sectors to source competitive finance arrangements may be important considerations.

⁷ Note that Table 2 is to be read in conjunction with the approach and qualifiers that accompany it.

3.3 Extending the use of daily margining

This section considers the option of extending the “reduced MCL” mechanism currently available in the NEM, to provide participants with the option of reducing their bank guarantee obligations in exchange for increased likelihood of making daily margin payments to NEMMCO. The option does not involve directly shortening the NEM settlement cycle, but is included for completeness and to facilitate discussion of a full range of alternatives.

Under the current NEM prudential regime, participants are permitted to elect to operate under a “reduced MCL”, in which case their MCL is calculated using a payment period of 14 days instead of the default 28 days, which effectively reduces the resulting MCL to 66.6% of the default level. As a consequence, the trading limit is reduced to 50% of the original MCL, compared to the default regime under which it is typically set to 84% of the provided credit support. Some 70% of the market has already opted to use this existing reduced MCL regime.

Under either the default or the reduced MCL regime, participants are required to keep their total outstandings within their Trading Limit (the Trading Limit is equal to the participant’s bank guarantee less a specified Prudential Margin). Participants’ total outstandings are monitored daily by NEMMCO, and any breach of the Trading Limit can result in the issue of a Call Notice⁸ any time after 10:30am on the day the breach is detected. Therefore, in the event of high spot prices, a participant may need to take urgent action to reduce their total outstandings and avoid the need for a Call Notice to be issued.

The short notice action taken by participants in these circumstances may take several forms including the lodgement of a cash security deposit, the lodgement of a reallocation transaction that reduces their outstandings, or the lodgement of an increased bank guarantee. In NEMMCO’s experience to date, all of these options are used by participants, depending on their situation at the time.

At times of high spot prices, particularly where the high prices occur for a number of days, participants can find themselves in a position where they need to take action daily to keep their total outstandings within the Trading Limit. This can require the participant to make daily cash or other lodgements with NEMMCO to cover the increase in outstandings resulting from the previous day – effectively this becomes a period of daily margining. In this regard, many participants have already experienced some aspects of daily settlement.

If a participant opts to use the reduced MCL regime, their Trading Limit will be lower than the alternative default case. Therefore, there will be an increased likelihood that the daily margining process described above will occur. Opting for a reduced MCL therefore reflects a decision by the participant to accept greater risk of daily margining, in return for a reduced bank guarantee obligation.

If the reduced MCL regime was taken further, participants could be provided the option of further lowering their MCL in exchange for an even higher risk of being required to address outstandings on a daily basis. Such a measure would allow participants to choose where they wish to operate on a spectrum from high reliance on bank guarantees on one end, to high reliance on daily payments at the other. While being a less pervasive option than the compulsory changes to the settlement cycle discussed in sections 3.1 and 3.2, it would probably also deliver materially less benefits as indicated by the following observations:

⁸ A Call Notice can impose very severe obligations on a Participant, to reduce their total outstandings to their “typical accrual” level, which could be 20-30% of their trading limit.

- Consideration would need to be given to the question of whether access to a very low MCL regime should be subject to a test of the organisation's capability to meet short notice margin payments (eg credit rating), in order to ensure the mechanism does not increase the risk of default in the market. If a test was imposed, then the mechanism would be more likely to benefit large rather than small companies. The current "reduced MCL" mechanism can be used by any participant, and no conditions apply to the use of it.
- The mechanism would probably not deliver reductions in credit default risk to the degree of the options discussed earlier, particularly in high price periods. This is because spot market payments would need to be made as they are incurred, while contract market settlements would not occur until the usual four week credit period has elapsed. There is therefore no real improvement in the integration of spot and OTC contract markets of the type that is delivered by a shorter settlement cycle.

As noted above, this option of extending the reduced MCL mechanism is included in this paper for completeness and to facilitate discussion, although it is not a direct means of shortening the NEM settlement cycle.

Table 1: Summary of considerations for a shortened NEM settlement cycle

#	Option	Observations
1	<p>Shortened Weekly Settlement Cycle</p> <ul style="list-style-type: none"> This would entail maintaining a weekly settlement cycle, but settling fewer weeks in arrears – eg settling on the basis of the current preliminary settlement statements. 	<ul style="list-style-type: none"> Would not require more frequent settlement to take place, because settlement would still be weekly, but fewer weeks in arrears. Would still require credit support, but MCLs would be materially reduced. The reduction would be roughly proportional to the amount the current credit period of 42 days is reduced. Would need to be compulsory for all participants. Requires consequential change to the timing of OTC contract settlements, but improves integration of the spot and forward market settlements by settling both markets with less delay. 20 week and 30 week settlement revisions would continue to occur as at present. Likely to result in movement of working capital from retailers to generators, and a saving in credit support costs. Whether there is a net cost or net benefit to a particular retailer would depend on the cost it faces for credit support.
2	<p>Daily Spot Market Settlement</p> <ul style="list-style-type: none"> For example, daily settlement two days after the market operates (T+2 settlements) 	<ul style="list-style-type: none"> Observations are as for (1) above, plus: Higher settlement frequency (eg daily) is likely to increase process costs for NEMMCO and participants. Each business day, a settlement statement would be prepared, based on MMS data, for the previous business day, and any intervening non-business days. Cash settlement would take place the following day. Therefore, on a Monday the settlement statement would cover Friday, Saturday and Sunday – and that statement would be cash settled on the Tuesday. Payment would take place on the basis of the statement, regardless of differences of view. Adjustments would be processed through 1, 20 and 30 week settlement adjustment statements as necessary. Increased movement of working capital from retailers to generators, but increased savings in credit support costs. Net cost or benefit to a particular retailer would depend on its cost of credit support. Would deliver further efficiency gains above reduced weekly settlement, and would further reduce prudential requirements, therefore lowering the risk of retailer prudential failure.
3	<p>Increased reliance on daily margining practices in the spot market</p> <ul style="list-style-type: none"> This could be achieved through further development of the current “Reduced MCL” mechanism, which increases the risk of in daily margin payments being required. 	<ul style="list-style-type: none"> Essentially reducing the MCL for a particular participant would increase the need for margin payments when outstandings exceed the trading limit. Margining is currently through lodgement of SDAs, ex post reallocations, or additional credit support to prevent outstandings exceeding the trading limit. Could be an optional choice per participant – rather than compulsory. There is a question as to whether access to such a mechanism should be subject to a test applied to the participant (eg credit rating). If access to reduced MCLs was conditional, then small participants may be less likely to benefit as much as larger ones from the arrangement; The mechanism is less likely to reduce default risks in the NEM than shortening the NEM settlement cycle by direct means, because it would leave OTC contract settlement to take place after four weeks so that daily margin payments would be made without the offsetting contract payments occurring at a similar time.

Appendix A: Estimated Cost Saving from Shorter Settlement Cycle

The following is a rough estimate of the potential cost saving that might be accessible, subject to implementation expenses, from shortening the NEM settlement cycle so that settlement takes place a) 1 week after the end of the trading week and b) two days after the trading day. Currently, settlement takes place 4 weeks after the end of the billing period. The estimate is necessarily based on some broad assumptions:

- It is assumed that spot market credit support typically required prior to June 07 was around \$1.6b. This was for average spot prices and volatility factor (VF). The VF represents the ratio of peak to average outstandings during the settlement credit period (currently 42 days). In the NEM, the VF generally varies in the range from around 1.2 to around 3.
- No assumption is made on the credit support arrangements used for the OTC contract market, a material portion of which may be unsecured⁹. For the purpose of this estimate, no allowance has been made for credit support in the OCT market, so the main focus of savings is in covering spot market positions.
- As noted in section 3, if the NEM was settled on the basis of the current preliminary settlement statements, the credit period could be reduced from the default of 42 to 19 days, which may allow a reduction in credit support requirement for the spot market of up to 55% or \$0.9b (ie 55% of \$1.6b).
- Again, from section 3, if the NEM was settled two days after physical operation (T+2 settlement), the credit period could potentially reduce from the default of 42 to around 9 days – ie up to a 70% reduction. This translates to a reduction of around \$1.1b in the spot market credit support requirement.
- Discussion in the working group indicates that the cost of credit support varies widely between participants. Therefore, estimates have been done for a range of credit support costs from 0.5% to 10% as shown in Tables 1 and 2. To get an idea of the order of magnitude of money involved across the NEM as a whole, if the cost of financing this credit support was 1.0%, the annual savings could be in the order of **\$9m for weekly settlements, or \$11m for T+2 settlements**. These numbers would be proportionally higher for higher costs of credit.
- These savings would also be higher if a material proportion of the OTC contract market was secured by credit support, and would be higher again for years with high spot price.
- For those already on reduced MCLs the savings would be lower.
- It is likely that the MCL values may not be able to be reduced in direct proportion to the reduced time period of exposure but for the purposes of this paper this has not been considered.

⁹ A publication from d-cyphaTrade states that “unlike some overseas OTC energy markets, a significant amount of OTC contract obligations in Australia is unsecured and not protected by daily margining arrangements”. d-cyphaTrade, Market Initiatives – Recognising Credit Risk in the Australian OTC Electricity Market – 30 June 2007.