Notice of Market Rules Modification

Paper No.:	EMC/RCP/56/2011/300
Rule Reference:	Market Rules/Chapter 6 Section 10.3; Chapter 7 Section 2.6; Chapter 8 Section 1.1.164A; Market Manual (Settlements) Chapter 5
Proposer:	Energy Market Company
Date Received by EMC:	23 September 2010
Category Allocated:	2
Status:	Approved by EMA
Effective Date:	03 July 2012

Summary of Proposed Rule Modification:

This paper discusses whether the wholesale market should re-claim reserve and regulation payments made to market participants that cannot comply with reserve/regulation dispatch in real-time.

At the 14th RCP, EMC presented that 2003 payments to non-complying generators amounted to 0.13% and 0.08% of the reserve and regulation markets respectively. Considering the small amount of such payments, it does not appear cost-effective to implement a solution. The RCP thus supported EMC's recommendation to set a threshold at 1% of market size (i.e. $600,000 of the $60 million reserve and regulation market in 2004), and notify the Panel when it exceeds the threshold on a rolling 12-month basis.

At the 46th RCP Meeting in 2009, this issue resurfaced when the rolling 12-month total for reserve/regulation payments reached $550,666. In addition, these payments were skewed by distribution of MPs, with a single MP accounting for 64% of all payments to non-providers since market start. Given the substantial payment amounts, the RCP agreed to recover reserve or regulation payments made to non-providers on a monthly basis, to be refunded to parties that paid for the respective service for that given period ("post-settlement clawback").

At the 52nd RCP meeting, the RCP decided that instead of clawing back reserve and regulation payments made to non-providers, all non-providers identified before 5 business days (before the preliminary settlement statement is posted) will not be paid in the first place ("pre-settlement adjustment"). The non-provision cases identified after 5 business days may be referred to the MSCP, whereby any recovered amounts arising from MSCP determinations will be refunded to the market through the MEUC.

The rule modification proposal to the Market Rules and Market Manual are set out in Annexes 1 and 2 respectively were published for consultation on 31 May 2011.

The RCP, by majority vote, recommends that the EMC Board adopt the rule modification proposal to the Market Rules and Market Manual as set out in Annexes 1 and 2 respectively.

Date considered by Rules Change Panel: 12 July 2011

Date considered by EMC Board: 21 July 2011

Date considered by Energy Market Authority: 10 August 2011

Proposed rule modification:

See attached paper.

Reasons for rejection/referral back to Rules Change Panel (if applicable):

Energy Market Company

PAPER NO.	:	**EMC/BD/03/2011/07(a)**
RCP PAPER NO.	:	**EMC/RCP/56/2011/300**
SUBJECT	:	**RECOVERY AND REFUND OF RESERVE AND REGULATION PAYMENTS**
FOR	:	**DECISION**
PREPARED BY	:	**TAN LIANG CHING** **SENIOR ECONOMIST, MARKET ADMINISTRATION**
REVIEWED BY	:	**PAUL POH** **SVP, MARKET ADMINISTRATION**
DATE OF MEETING	:	**21 JULY 2011**

Executive Summary

This paper discusses whether the wholesale market should re-claim reserve and regulation payments made to market participants that cannot comply with reserve/regulation dispatch in real-time.

At the 14th RCP, EMC presented that 2003 payments to non-complying generators amounted to 0.13% and 0.08% of the reserve and regulation markets respectively. Considering the small amount of such payments, it does not appear cost-effective to implement a solution. The RCP thus supported EMC's recommendation to set a threshold at 1% of market size (i.e. $600,000 of the $60 million reserve and regulation market in 2004), and notify the Panel when it exceeds the threshold on a rolling 12-month basis.

At the 46th RCP Meeting in 2009, this issue resurfaced when the rolling 12-month total for reserve/regulation payments reached $550,666. In addition, these payments were skewed by distribution of MPs, with a single MP accounting for 64% of all payments to non-providers since market start. Given the substantial payment amounts, the RCP agreed to recover reserve or regulation payments made to non-providers on a monthly basis, to be refunded to parties that paid for the respective service for that given period ("post-settlement clawback").

At the 52nd RCP meeting, the RCP decided that instead of clawing back reserve and regulation payments made to non-providers, all non-providers identified before 5 business days (before the preliminary settlement statement is posted) will not be paid in the first place ("pre-settlement adjustment"). The non-provision cases identified after 5 business days may be referred to the MSCP, whereby any recovered amounts arising from MSCP determinations will be refunded to the market through the MEUC.

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The RCP, by majority vote, recommends that the EMC Board **adopt** the rule modification proposal to the Market Rules and Market Manual as set out in **Annexes 1** and **2** respectively.

1. Introduction

This paper assesses whether we should recover reserve and regulation capacity payments from market participants that could not or fail to provide the relevant service.

2. Background

Payment is made to reserve and regulation providers based on scheduled quantity determined in the real-time dispatch schedule (RTDS), which is produced prior to the dispatch period the service is required. However, if such providers (usually generators) tripped before or inside the dispatch period, they would still be paid capacity payments for reserve and/or regulation.

In a series of consultative meetings EMC held with market participants in late 2003, some participants remarked that reserve and regulation payments should not be made to units that tripped. EMC studied this issue and felt that we should also consider cases where units did not trip, but simply failed to provide reserve/regulation energy when called on to do so. As a general principle, as long as a service is not provided, no payment should be made. With this in mind, we conducted the following analysis.

3. Economic Analysis

The following sections refer to a generation unit that has been cleared to provide reserve and/or regulation.

3.1 Current Situation

As explained earlier, a generation unit is paid for reserve/regulation based on scheduled quantity in the RTDS. In real-time, however, there are three scenarios where it is unable or failed to provide the scheduled reserve/regulation:

1. The generation unit trips before the period it was scheduled for reserve/regulation and remains unavailable for the period.
2. The generation unit trips during the period.
3. The generation unit is unable to provide adequate regulation or reserve in accordance with the System Operation Manual Chapter 10, Sections 10.2.8 and 10.2.9 (e.g. not able to provide the scheduled MW regulation/reserve within the required response time).

In scenario 1, it is clear that no service has been rendered at the scheduled time and therefore no payment should be made. For scenarios 2 and 3, it could be argued that service has been partially rendered, hence justifying that the generating unit should be paid on a pro-rated basis. To assess the validity of this argument, we must consider the nature of reserve and regulation.

3.1.1 Partial Availability of Reserve and Regulation

Reserve is generation capacity required to guard against failure of generators. Regulation is generation capacity needed to meet real time fluctuations between generation and load. They are both procured to safeguard system security. For both types of service,

generators are paid a capacity payment for being ready to provide reserve/regulation energy when called on.

The relevant question to ask in scenarios 2 and 3 is whether the generation unit, in rendering partial service, has fulfilled its role in safeguarding system security. In terms of obligation, it has failed because it could not provide the stipulated quantity of energy for the stipulated duration. This failure may create a system security issue that requires the system operator to impose constraints on other complying generation units. If other generation units are not available, system security will be at risk. In short, the failure has threatened system security instead of safeguard it. For that, there can be no basis to make any capacity payment to the unit.

The bottom-line is that scenarios 1-3 are all detrimental to system security. Hence, there is no reason to treat them differently where capacity payment is concerned. Pro-rating reserve/regulation payment would not be consistent with the importance placed on system security.

3.2 Extent of the problem – How much was paid?

The table below summarizes the total payments made to generators that did not comply with dispatch instructions on reserve and regulation.

Reserve	**Year 2003**
Payment to non-complying units	[1]$48,400
Total reserve settlement value	$37,000,000
Payment to non-complying units as a % of total reserve market	**0.13%**
Regulation	
Payment to non-complying units	[2]$18,400
Total regulation settlement value	$24,000,000
Payment to non-complying units as a % of total reserve market	**0.08%**

For 2003, we can see that payments to non-complying generators amounted to 0.13% and 0.08% of the reserve and regulation markets respectively. As such, the benefits to be derived from solving this problem may not be very significant. The cost of implementing any solution would thus be vital in determining if it is economically efficient to do so.

[1] Payments calculated based on information provided by PSO on periods when generation units were unable to meet reserve.
[2] Payments calculated based on information provided by PSO on periods when generation units were unable to meet regulation.

4. Conclusion

Making capacity payments to generating units that could not or fail to provide reserve and regulation in real time is undesirable. To correct this practice, costs would have to be incurred to implement a settlement solution at the wholesale level. Market participants would also have to deal with regular adjustment to their invoices.

In 2003, the total reserve/regulation payments made to non-complying units were less than 0.2% of the value of the two respective markets. To implement a solution to correct such payments would incur costs that are likely to overwhelm the benefit. **Hence, from the wholesale market point of view, implementing a "settlement" solution would not be efficiency-enhancing at this stage.**

Mitigating Factor

All instances of non-compliance with dispatch instructions are reported to the MSCP. In assessing such cases and considering taking any action on the generators, the MSCP may consider the fact that reserve/regulation payments were made to non-complying units. We believe this would help to reduce the extent of the inequity associated with such payments.

Monitoring

Given that the reserve and regulation markets combined are worth about $60 million a year, a reasonable threshold can be set at 1%, i.e. $600,000. A monitoring process can be put in place by EMC to track the amount of reserve/regulation payments made to non-complying units on a rolling 12-month basis and provide a quarterly report to the RCP. Where such combined payments exceed $600,000, the RCP can consider whether to implement a solution.

5. Discussion by the RCP

At the 14th RCP meeting in 2004, the above analysis was presented and discussed. The RCP supported EMC's recommendation to set a threshold at 1% of market size (i.e. $600,000 of the $60 million reserve and regulation market in 2004), and notify the Panel when the amount exceeds the threshold on a rolling 12-month basis for possible action.

At the 46th RCP Meeting in 2009, this issue resurfaced when the rolling 12-month total for reserve/regulation payments reached $550,666.

At the 51st RCP meeting, the RCP noted that the cumulative payments for reserve and regulation payments since 2003 to 2010 (July) were $1090k and $185k respectively. In particular, reserve payments to non-providers spiked up significantly in 2009 ($527k) and the first seven months of 2010 ($265k). In addition, these payments were skewed by distribution of MPs, with a single MP accounting for 64% of all payments to non-providers since market start. Since the payments to non-providers were not randomly spread over MPs (i.e. it is not a "zero-sum game"), the RCP decided that there is merit in setting up a system to claw back these payments.

The RCP agreed on a proposal whereby reserve or regulation payments made to non-providers will be clawed back on a monthly basis and refunded to parties that paid for the respective service for that given period ("post-settlement clawback"). A materiality threshold set at $30k for the total reserve/regulation payments in a month will also be considered, below which there will not be any recovery/refund effected for the month, if doing so reduces implementation cost.

Specifically, the process involves:

On a monthly basis, on a date when PSO has confirmed that the data on non-providers for the preceding month is complete (e.g. on 15 Feb for all of Jan cases), EMC will:

1. Calculate the total reserve and regulation payments to non-providers for the month, based on PSO's data
2. If the amount for 1. above is less than or equal to $30,000, no recovery/refund will be effected
3. If the amount for 1. above is more than $30,000, EMC will:
   a) Calculate total reserve or regulation refund to all parties, in the proportion of reserve or regulation payments that they had made, for that given period
   b) Post the reserve recovery amount, regulation recovery amount, reserve refund amount and regulation refund amount as separate line items in the Preliminary Settlement Statement (PSS) for all affected MPs, on the business day following the completion of the settlement adjustments
   c) For each affected MP, EMC will provide them with a statement with details of the calculations of b) above

This proposal was published for industry feedback, and the comments received are addressed in the subsequent section "**Consultation (Post-Settlement Clawback**)".

At the 52nd RCP meeting, the RCP decided that instead of clawing back reserve and regulation payments made to non-providers, all non-providers identified before 5 business days (before the preliminary settlement statement is posted) will not be paid in the first place ("pre-settlement adjustment"). The non-provision cases identified after 5 business days may be referred to the MSCP, whereby any recovered amounts arising from MSCP determinations will be refunded to the market through the MEUC.

To reiterate, there are 3 scenarios under which a generating unit might be considered not to have provided reserve or regulation:

1) The generation unit trips before the period it was scheduled for reserve/regulation and remains unavailable for the period.
2) The generation unit trips during the period.
3) The generation unit is unable to provide adequate regulation or reserve in accordance with the System Operation Manual Chapter 10, Sections 10.2.8 and 10.2.9 (e.g. not able to provide the scheduled MW regulation/reserve within the required response time).

The PSO will be able to identify all Scenario 1 and 2 cases but for Scenario 3 cases, the PSO will identify cases on a "best endeavor" basis within 5 business days, using all available data. A provision will be included in the market rules requiring MPs to provide the data requested by the PSO within a certain timeframe in respect of potential non-provision cases.

The draft changes to the Market Rules and Market Manual to effect the pre-settlement adjustment proposal are included in **Annexes 1** and **2** respectively**,** and a summary of the key changes are provided in the table overleaf:

Table 1: Summary of Proposed Changes

Section	Amendment
Chapter 6, Section 10.3.1, 10.3.2, 10.3.3, 10.3.4	• To require EMC to set the settlement quantity for reserve or regulation of a given settlement account to zero, if the PSO reports to EMC of a non-provision event relating to a registered facility associated with the given settlement account.
Chapter 7, Section 2.6.1, 2.6.2	• To require the PSO, where it suspects that a non-provision event may have occurred, to inform the relevant market participant and may request information to assist the PSO in determining whether a non-provision event has occurred. • To require the market participant to provide the PSO with the information requested within 2 business days
Chapter 7, Section 2.6.3	• To require the PSO to inform the EMC and the relevant market participant of each non-provision event within 5 business days of the trading date
Chapter 8, Section 1.1.164A	• To define non-provision event
Market Manual (Settlement) Chapter 5 (new Chapter)	• To specify the format of the Reserve and Regulation Non-Provision Information File that PSO will send to EMC

6. Impact on Market Systems

To implement the recovery and refund proposal, changes will be necessary to the:

- Settlement system (to zerorise the reserve/regulation)
- Trading website (to provide reports to MP)
- Data warehouse

It would require an external cost of $30,000, and a timeline of 6 months.

7. Implementation Process

The time required to implement the proposal is estimated by EMC to be **6 months** after the EMA has approved the proposed rule changes.

8. Consultation (Post-Settlement Clawback)

The rule change proposal for the post-settlement clawback was published for comments on 27 September 2010, and comments were received from PowerSeraya, Senoko Power and Sembcorp Cogen. Their respective comments and EMC's response are provided below:

Comments from PowerSeraya

PowerSeraya notes that market participants would not be able to verify the accuracy of the refund amounts as information by dispatch period on the scheduled amounts of reserve and regulation provision as well as the reserve provider group details of gencos would be needed. Currently, gencos only receive such information pertaining to themselves and not pertaining to other gencos. If the proposal is implemented, there should be an audit provision for checking of the accuracy of the calculation of the refund amounts.

EMC's Response

The market rules already provide for a yearly settlement audit (Chapter 7, Section 5.15), and for the audit report to be provided to Market Participants (Chapter 7, Section 5.15.6). If PowerSeraya have any specific views on the adequacy of the audit coverage (e.g. pertaining to the calculation accuracy of the refund amounts), they can raise it with EMC's Settlements Team.

Comments from Senoko Power

In principle, Senoko supports the rationale underpinning the proposal. However, it is important to ensure that implementation of the proposal has a positive net benefit. To better understand whether this will be achieved it would be useful to quantify the following:

1. *The one-off costs associated with the NEMS system changes required to implement the proposal. These could then be compared with the annual level of payments to non-providers. In this context it would be useful for EMC to determine whether the implementation of the RC282 (Mixed Integer Programming-Based Modeling of Reserve Constraints) has influenced the materiality of non-provision.*
2. *The ongoing monthly costs associated with recovery and refund of funds. These could then be compared with the proposed $30k monthly threshold. In general, given the number of parties likely to receive a refund, the proposed threshold appears too low.*

EMC's Response

The costs associated with implementing the proposal are detailed in Section 6 of this paper.

RC282 (Mixed Integer Programming-Based Modeling of Reserve Constraints) took effect in Feb 2010. While the level of reserve/regulation non-provision in value terms since then has not been high, the timeline is too short to draw any firm conclusions.

In any case, even with the MIP implementation, cases of non-provision events will still occur (e.g. from generating units scheduled for reserve/regulation tripping). Indeed, the spike in payments to non-providers in 2009 were largely due to generating units scheduled for reserve tripping during periods of high reserve prices (given the quantity of reserve/regulation procured does not fluctuate much, spike in payments to non-providers largely arise due to high reserve/regulation prices).

Comments from Sembcorp Cogen

We note that at 14th RCP meeting, a threshold of $600,000 was set on a rolling 12-month basis to monitor the non-provision of reserve and regulation. Sembcorp is of the opinion that EMC needs to take into account the newly implemented rule on MIP for primary and secondary reserve. With the newly implemented MIP rule, it would substantially reduce the instances of not providing reserve/regulation as per scheduled i.e. those non-provisions observed in 2009 and part of 2010 may not appear if MIP were in place. As such, we propose that an appropriate study or monitoring should start only after the date of implementation of MIP.

NEMS is designed as an ex-ante market. No generators are able to predict if their machines will trip in a particular period and withdraw their reserve offers accordingly and no generators would want to trip their machines for monetary gain in reserve payment. EMC needs to assess if this rule change will distort the ex-ante element of NEMS. Should RCP decides to recover reserve and regulation payment for not providing, then as a matter of equity EMC should re-look at the rule change proposal to compensate over provision of regulation as well.

Notwithstanding the above, threshold for recovery should separate reserve and regulation as regulation price is capped at $300 and the requirement for regulation is low. The cost to recover regulation payment may not be cost effective.

Also, it is fairer to compute reserve non-provision of a generating facility based on net value (payment – charge). For example, Generating Unit A is paid $1000 for reserve provision, and the cost of its own reserve share is $200. If Generating Unit A failed to provide reserve, the monitoring of non-provision payments and proposed recovery amount should be based on the net payment (i.e. $1000-$200 = $800) rather than the gross reserve payment (i.e. $1000).

EMC's Response

Please refer to the response to Senoko Power earlier, in relation to the effect of the MIP implementation on non-provision events.

The proposal to recover reserve/regulation payments from non-providers hinges on the principle that payment should not be made to parties that did not provide the service, rather than a discussion on ex-ante/ex-post principles. While it is true that generators would not be able to predict when their machines will trip, the fact remains that system security was compromised as a result; the recovery of reserve/regulation payments simply ensures that market participants are incentivised to provide services that they have been scheduled for, rather than being a punitive measure.

EMC does not agree that the computation of non-provision payments should be on a net basis, rather than a gross basis. Drawing upon the same illustration (Generating Unit A is paid $1000 for reserve provision, and pays $200 for its own reserve share), suppose that there are 9 other generating units all paying $200 for their own reserve shares. Since all 10 units have the same reserve share and Generating Unit A did not provide any reserve, it stands to reason that all 10 units should have the same financial treatment/outcome.

Under EMC's proposal, the $1000 recovered from Generating Unit A will be evenly distributed to all 10 units, with each receiving a $100 refund. However, under Sembcorp's proposal, Generating Unit A will effectively retain a $200 relief from its reserve share,

while the other 9 units will share in only the net $800 recovered (or $89 each). It is unjustifiable for Generating Unit A to have a better financial outcome than the other 9 units (i.e. $200 vs. $89).

Another way of looking at the net versus gross issue is that the basis of **payments to reserve providers** and **payments for reserve share** must be examined independently. Reserve providers are paid because of the service (i.e. standby capacity) they are expected to provide during the dispatch period. These payments are then charged to parties that cause the need for reserve (i.e. generating units with scheduled energy, with higher energy schedules representing higher system risk and hence charged a larger reserve share). For a generating unit, even if it were not paid any reserve due to non-provision, the fact remains that it has caused system risk with its energy schedule, and should hence be charged for the latter on a gross basis.

9. Legal Sign Off

The text of the rule modification has been vetted by EMC's external legal counsel, whose opinion is that the modification reflects the intent of the rule modification proposal as expressed in the third column of the Table in **Annex 1.**

10. Consultation (Pre-Settlement Adjustment)

The draft changes to the Market Rules and Market Manual in Annexes 1 and 2 respectively were published for consultation on 31 May 2011, and the following feedback was received:

Comments from PSO

1) New rule proposed: Section 2.6.3.2 (The *PSO* shall use its best endeavours to notify not later than 5:00 pm on the fifth *business day* after a given *trading day*) each *market participant* of each *non-provision event* which occurred in that given *trading day* in respect of that *market participant*~~, and of the respective reason(s) for the *PSO*'s determination of each such *non-provision event*.'~~

   PSO: Please delete as shown. PSO determines non-provision events based on reasons stipulated in Chapter 10 of SOM. The relevant market participants are already aware of the cause of their non-provision, there is no value-add to explicitly state reason for each and every case. Relevant market participant can clarify with PSO for specific case if need be.

   EMC: If market participants are usually aware of the reasons why they are unable to provide reserve or regulation and can clarify with PSO when they need to, then the proposed rules can be revised as proposed by PSO.

2) Concept paper: Section 3.1"..... There are three scenarios where generating units consider unable or fail to provide:....'

   PSO: Instead of listing the three scenarios, suggest to point to SOM, Chapter 10, Section 10.2.8 and Section 10.2.9, which listed more than the 3 scenarios of non-provision.

   EMC: The paper is revised to incorporate PSO's suggestion to refer to the System Operation Manual, Chapter 10, Sections 10.2.8 and 10.2.9.

3) New Section 5.1 in Chapter 7 of Market Manual: '.... The *PSO* shall provide the *EMC* with the Reserve and Regulation Non-Provision Information File in accordance with Chapter 7, section 2.6.3 of the *market rules* via mechanism acceptable to the *PSO* and the *EMC* ~~file transfer mechanism from a user interface upload~~, no later than 5:00pm, of the fifth *business day* after the *trading day*....'

   PSO: Proposed to re-word it as 'file transfer mechanism' might be confused with 'file transfer protocol'.

   EMC: The Market Manual is amended according to PSO's suggestion and using a generic phrase so that in future, if there are operational changes, there is no need to go through the RCP to update the market manual. For clarification, the current mechanism acceptable to the PSO and EMC for the Reserve and Regulation Non-Provision Information File is the "File Upload Mechanism".

11. Deliberation by the RCP

At the 56th RCP meeting, the RCP discussed PSO's comments to remove the requirement for the PSO to provide the non-provider MPs with a reason for its determination of non-provision. As there were no objections from the RCP, the proposed rules were revised as proposed by PSO.

The proposed rule modifications were then put to a vote by the RCP:

11 RCP members **voted for** the proposal to implement the pre-settlement adjustment mechanism to recover reserve and regulation payments from non-providers:

1. Mr. Henry Gan
2. Mr. Kng Meng Hwee
3. Mr. Daniel Lee
4. Mr. Philip Tan
5. Mr. Luke Peacocke
6. Mr. Chan Hung Kwan
7. Mr. Loh Chin Seng
8. Mr. Sean Chan
9. Mr. Lawrence Lee
10. Dr. Goh Bee Hua
11. Mr. Robin Langdale

1 RCP member **voted against** the proposal:

1. Mr. Dallon Kay

12. Recommendation

The RCP recommends that the EMC Board:

1. **adopt** the rule modification proposal to the Market Rules and Market Manual as set out in Annexes 1 and 2 respectively;
2. **seek EMA's approval of** the rule modification proposal; and
3. **recommend** that the rule modification proposal come into force **6 months** after the date on which the approval of the Authority is published by the EMC.

Current Market Rules (1 January 2011)	**Proposed Rule Changes** (Deletions represented by strikethrough text and additions represented by double underlined text)	**Reasons for Rule Change**
CHAPTER 6	**CHAPTER 6**	
10.3 DETERMINING SETTLEMENT QUANTITY DATA	**10.3 DETERMINING SETTLEMENT QUANTITY DATA**	
10.3.1 Subject to 10.3.3, for *settlement* purposes, the quantity in MWh of *reserve* of each *reserve class* supplied from a *registered facility* in a *dispatch period* shall equal one-half of the MW quantity described in the *real-time dispatch schedule* for the corresponding *reserve class* for that *dispatch period*.	10.3.1 Subject to 10.3.3 and 10.3.4, for *settlement* purposes, the quantity in MWh of *reserve* of each *reserve class* supplied from a *registered facility* in a *dispatch period* shall equal one-half of the MW quantity described in the *real-time dispatch schedule* for the corresponding *reserve class* for that *dispatch period*.	To make section 10.3.1 also subject to section 10.3.4.
10.3.2 Subject to 10.3.3, for *settlement* purposes, the quantity in MWh of *regulation* supplied from a *registered facility* in a *dispatch period* shall equal one-half of the quantity described in the *real-time dispatch schedule* for that *dispatch period*.	10.3.2 Subject to 10.3.3 and 10.3.4, for *settlement* purposes, the quantity in MWh of *regulation* supplied from a *registered facility* in a *dispatch period* shall equal one-half of the quantity described in the *real-time dispatch schedule* for that *dispatch period*.	To make section 10.3.2 also subject to section 10.3.4.
10.3.3 Where the *EMC* has issued a price revision *advisory notice* under section 9.3.2B for a *dispatch period* with no useable *real-time dispatch schedule* for *energy*, *reserve* and *regulation*, the *EMC* shall determine, for *settlement* purposes: 10.3.3.1 the size of a GRF in section A.2.1.1 of Appendix 7A; 10.3.3.2 the quantity of reserve supplied from a	10.3.3 Where the *EMC* has issued a price revision *advisory notice* under section 9.3.2B for a *dispatch period* with no useable *real-time dispatch schedule* for *energy*, *reserve* and *regulation*, the *EMC* shall determine, for *settlement* purposes: 10.3.3.1 the size of a GRF in section A.2.1.1 of Appendix 7A; 10.3.3.2 subject to 10.3.4, the quantity of reserve	To make sections 10.3.3.2 and 10.3.3.3 subject to section 10.3.4.

Current Market Rules (1 January 2011)	**Proposed Rule Changes** (Deletions represented by strikethrough text and additions represented by double underlined text)	**Reasons for Rule Change**
registered facility in section 10.3.1; and 10.3.3.3 the quantity of regulation supplied from a registered facility in section 10.3.2, by re-running the *market clearing engine* for the *dispatch period*. The *market clearing engine* shall be re-run using all the input data that should have been supplied to it when the *real-time dispatch schedule* for that *dispatch period* would normally have been produced. Where it is not possible to so re-run the *market clearing engine*, the *EMC* shall determine the quantities in sections 10.3.3.1 to 10.3.3.3 based on the *PSO*'s *dispatch instructions* for *energy, reserve* and *regulation* for that *dispatch period.*	supplied from a registered facility in section 10.3.1; and 10.3.3.3 <u>subject to 10.3.4,</u> the quantity of regulation supplied from a registered facility in section 10.3.2, by re-running the *market clearing engine* for the *dispatch period*. The *market clearing engine* shall be re-run using all the input data that should have been supplied to it when the *real-time dispatch schedule* for that *dispatch period* would normally have been produced. Where it is not possible to so re-run the *market clearing engine*, the *EMC* shall<u>, subject to 10.3.4,</u> determine the quantities in sections 10.3.3.1 to 10.3.3.3 based on the *PSO*'s *dispatch instructions* for *energy, reserve* and *regulation* for that *dispatch period.* <u>10.3.4 Notwithstanding 10.3.1, 10.3.2 or 10.3.3, where the *EMC* is notified by the *PSO* in accordance with section 2.6.3.1 of Chapter 7 that a *non-provision event* has occurred in a *dispatch period* with respect to a *registered facility*, if:</u> <u>10.3.4.1 such *non-provision event* is in respect of</u>	To make the last paragraph of section 10.3.3 subject to section 10.3.4. To clarify that notwithstanding sections 10.3.1, 10.3.2 or 10.3.3, where the EMC is notified by the PSO (in accordance with section 2.6.3.1 of Chapter 7) of a non-provision event with respect to a registered facility in a dispatch period, the quantity of reserve or

Current Market Rules (1 January 2011)	**Proposed Rule Changes** (Deletions represented by strikethrough text and additions represented by double underlined text)	**Reasons for Rule Change**
	reserve, then the quantity of *reserve* of each *reserve class* supplied from that *registered facility* in that *dispatch period* shall equal zero for *settlement* purposes, or 10.3.4.2 such *non-provision event* is in respect of *regulation*, then the quantity of *regulation* supplied from that *registered facility* in that *dispatch period* shall equal zero for *settlement* purposes.	regulation (as the case may be, based on whether the non-provision event is in relation to the failure to provide reserve or regulation respectively) for that registered facility for that dispatch period shall equal zero for settlement purposes.
CHAPTER 7	**CHAPTER 7**	
New Sections	**2.6 RESERVE AND REGULATION NON-PROVISION EVENT** 2.6.1 Where the *PSO* suspects that a *non-provision event* may have occurred in respect of a *market participant*, the *PSO* may inform that *market participant* of the *PSO*'s suspicion and request such information from that *market participant* as the *PSO* deems necessary to determine whether a *non-provision event* has occurred. 2.6.2 A *market participant* shall, where it receives a request for information from the *PSO* pursuant to	To permit the PSO to inform a market participant of its suspicion that a non-provision event may have occurred in respect of that market participant, and to permit the PSO to request for such information as the PSO deems necessary to determine whether a non-provision event has occurred. To require the market participant to provide the PSO with such

Current Market Rules (1 January 2011)	**Proposed Rule Changes** (Deletions represented by strikethrough text and additions represented by double underlined text)	**Reasons for Rule Change**
	section 2.6.1, provide the *PSO* with such information as the *PSO* has requested for, no later than 2 *business days* after the *PSO*'s request. 2.6.3 The *PSO* shall use its best endeavours to notify not later than 5:00 pm on the fifth *business day* after a given *trading day*: 2.6.3.1 the *EMC* of all *non-provision events* which occurred in that given *trading day*, in the form prescribed in the applicable *market manual*; and 2.6.3.2 each *market participant* of each *non-provision event* which occurred in that given *trading day* in respect of that *market participant*.	information as the PSO has requested for pursuant to section 2.6.1, within 2 business days of such request. To require the PSO to use its best endeavours to notify (no later than 5 PM on the fifth business day following a given trading day): (a) the EMC of all non-provision events which occurred in that given trading day, in the form prescribed in the applicable market manual, and (b) each market participant of each non-provision event which occurred in respect of that market participant on that given trading day.
CHAPTER 8	**CHAPTER 8**	

Current Market Rules (1 January 2011)	**Proposed Rule Changes** (Deletions represented by strikethrough text and additions represented by double underlined text)	**Reasons for Rule Change**
New Section	1.1.164A *non-provision event* means a failure by a *market participant*, as determined by the *PSO*, to provide *reserve* or *regulation* from its *generation registered facility* or *load registered facility* for any duration in a *dispatch period* in accordance with the *market rules* and the *system operation manual*;	To define a non-provision event as a failure by a market participant, as determined by the PSO, to provide reserve or regulation from its GRF or LRF for any duration in a dispatch period in accordance with the market rules and the system operation manual.

MARKET OPERATIONS MARKET MANUAL

SETTLEMENT
(Chapter 7 Settlement)

28 June 2011

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1 Definitions

All terms in italics used in this *market manual* shall have the same meaning as ascribed to them under the *market rules*.

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2 Bilateral contracts

2.1 Deadline for submission of bilateral contract data

The *selling market participant* may, submit their *bilateral contract data* (and if submitted, such submission shall be made any time prior to but no later than four *business days* after the *dispatch day* to which the *bilateral contract data* apply) in accordance with section 2.3 of Chapter 7 of the *market rules*.

The *selling market participant* shall submit *bilateral contract data* to the *EMC*-settlement personnel by 5.00pm on the fourth *business day* after the *dispatch day*.

2.2 Method of submission of bilateral contract data

Bilateral contract data in CSV file shall be submitted to the *EMC*-Settlement personnel through *secure email* addressed to settdata@emcsg.com.

2.3 Confirmation of receipt of bilateral contract data

An auto-acknowledgement will be generated by the *EMC*-Settlement personnel for the *selling market participant*.

2.4 Procedure in the event of system failure for bilateral contract data submission

In the event that there is a failure in the *electronic information system*, then the *selling market participant* shall submit its *bilateral contract data* to the *EMC*-settlement personnel by facsimile and phone the *EMC*-Settlement personnel to confirm receipt prior the stipulated deadline.

Contact details for the *EMC*-Settlement personnel are contained in chapter ~~8~~ 12 of this *market manual*. Required formats for CSV files and facsimile communication for *bilateral contract data* are included in section 2.6 of this *market manual.*

2.5 Details of bilateral data

Bilateral contract data must be submitted to the *EMC* in the following form:

- *Bilateral Absolute Quantity* (BAQ): Submit absolute figure in MWh
- *Bilateral Withdrawal Fraction* (BWF): Submit in percentage (%)
- *Bilateral Injection Fraction* (BIF): Submit in percentage (%).

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Type of physical services

- *Energy*: *Market participan*ts may contract for BAQ (absolute figure in MWh), BWF (percentage) or BIF (percentage)
- *Reserve*: Only BRQ contract is acceptable (absolute figure in MWh)
- *Regulation*: Only BFQ contract is acceptable (absolute figure in MWh).

Further information about bilateral settlement is on the *EMC*'s website: www.emcsg.com.

2.6 Format for communication of bilateral contract data

2.6.1 Format of the CSV file

Name	Type	Mandatory	Description
contract name	VARCH AR2(30)	Y	A name for this particular contract
seller_account	VARCHAR2(30)	Y	the Settlement Account assigned to the selling Market Participant on successful registration
buyer_account	VARCHAR2(30)	Y	the Settlement Account assigned to the buying Market Par ticipant on successful registration
contract_type	VARCHAR(10)	Y	One of: 'Energy' 'Load' 'Injection' 'Regulation' 'Reserve'
reserve_group	VARCHAR2(30)	N	Required if this contract is of type 'Reserve'. This relates to one of the Reserve Groups published on the EMC website.
start_date	DATE	Y	The starting date of this contract. Must be specified in DD-MMM-YYYY format.
end_date	DATE	Y	The ending date of this contract. Must be specified in DD-MMM-YYYY format.
Period	Number(2)	Y	Half hour trading period: 1 – 48
Quantity	Number	Y	These varies for: Energy = MWh figure Load = % of buyers load (WEQ) Injection = % of sellers injection (IEQ) Reserve = MWh figure Regulation = MWh figure

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Copy of the File Format:

```
En: Kakapo – Ngaio: Work Peak, KAKAPO, NGAIO, , Energy, 01-MAR-2002,
31-DEC-2002, 17, 150
En: Kakapo – Ngaio: Work Peak, KAKAPO, NGAIO, , Energy, 01-MAR-2002,
31-DEC-2002, 18, 154
..
Lo: Kakapo – Ngaio: Work Peak, KAKAPO, NGAIO, , Load, 01-MAR-2002, 31-
DEC-2002, 17, 15
Lo: Kakapo – Ngaio: Work Peak, KAKAPO, NGAIO, , Load, 01-MAR-2002, 31-
DEC-2002, 18, 50
..
In: Kakapo – Ngaio: Work Peak, KAKAPO, NGAIO, , Injection, 01-MAR-2002,
31-DEC-2002, 17, 15
In: Kakapo – Ngaio: Work Peak, KAKAPO, NGAIO, , Injection, 01-MAR-2002,
31-DEC-2002, 18, 50
..
Rg: Kakapo – Ngaio: Work Peak, KAKAPO, NGAIO, , Regulation, 01-MAR-
2002, 31-DEC-2002, 17, 15
Rg: Kakapo – Ngaio: Work Peak, KAKAPO, NGAIO, , Regulation, 01-MAR-
2002, 31-DEC-2002, 18, 50
..
Rv: Kakapo – Ngaio: Work Peak, KAKAPO, NGAIO, SLOW RESERVE, Reserve,
01-MAR-2002, 31-DEC-2002, 17, 15
Rv: Kakapo – Ngaio: Work Peak, KAKAPO, NGAIO, SLOW RESERVE, Reserve,
01-MAR-2002, 31-DEC-2002, 18, 50
..
```

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2.6.2 Format of bilateral contract by facsimile

Submission of Bilateral Contracts

Buying Acct	:	
Selling Acct	:	

EMC Office Use		
Reference	***:***	

Contract Type **	:	
Contract Name	:	
Start Date	:	
End Date	:	

Bilateral Contract by period (in MWh/ Fraction)

Period	:	Value	Period	:	Value	Period	:	Value
1	:		17	:		33	:	
2	:		18	:		34	:	
3	:		19	:		35	:	
4	:		20	:		36	:	
5	:		21	:		37	:	
6	:		22	:		38	:	
7	:		23	:		39	:	
8	:		24	:		40	:	
9	:		25	:		41	:	
10	:		26	:		42	:	
11	:		27	:		43	:	
12	:		28	:		44	:	
13	:		29	:		45	:	
14	:		30	:		46	:	
15	:		31	:		47	:	
16	:		32	:		48	:	

** Market Participant may select one of the below "Contract Type":

a) Energy – bilateral absolute quantity of energy (in MWh) being sold by seller to buyer
b) Injection – bilateral injection fraction of the total injection energy quantity being sold by seller to buyer
c) Load – bilateral withdrawal fraction of the total withdrawal energy quantity of buyer being purchased by buyer from seller
d) Regulation – bilateral regulation quantity (in MWh) being sold by seller to buyer
e) Reserve – bilateral reserve quantity (in MWh) being sold by seller to buyer

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3 Vesting contracts

3.1 Deadline for submission of vesting contract quantities and prices

The *MSSL counterparty* shall, up to seven *business days* before and by 5:00pm on the fifth *business day* after the *dispatch day*, provide the *EMC* with *vesting contract* quantities and prices (including any revisions to such *vesting contract* quantities and prices) in accordance with section 2.5.3 or 2.5.5, Chapter 7 of the *market rules.*

In the event of a force majeure adjustment event as defined in the applicable *vesting contract*, the *MSSL counterparty* shall provide the *EMC* with *vesting contract* quantities and prices (including any revisions to such *vesting contract* quantities and prices) by no later than 5:00pm on the ninth *business day* after the *dispatch day*.

3.2 Confirmation of receipt of vesting contract quantities and prices

An auto-acknowledgement will be generated by the *EMC* for the *MSSL counterparty* following the receipt of the *vesting contract* or revised *vesting contract* quantities and prices in accordance with section 2.5.4, Chapter 7 of the *market rules*.

3.3 Format of ~~Vesting~~ vesting ~~Contract~~ contract ~~Data~~data

The *MSSL* shall provide the *EMC* with *vesting contract data* in ASCII format via the Market Participant Server ("MPS").

In the event that there is a failure in the *electronic information system*, the *MSSL* shall submit the *vesting contract data* to the *EMC* in CSV file format through secure email to settdata@emcsg.com, and telephone EMC-Settlement personnel to confirm receipt prior to deadline stipulated in this market manuals. As the last resort, the *MSSL* may submit *vesting contract data* in CD format.

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Format of the vesting contract data in CSV file:

Table Format Example

Data Item	Field Description	Field Format	Field Type and Length	M/O	Valid Field Values
Reference	An arbitrary value used to identify Vesting Contract data.		VARCHAR2(12)	M	Each vesting contract data reference would be represented in the form "GGYYMMDD-CCC", where: GG refers to the unique generator; YYMMDD refers to given year, month and date; A CCC that starts with a number refers to Vesting Contract data with an Allocated Vesting Quantity with an associated Allocated Vesting Price; A CCC that begins with "T" refers to Vesting Contract data with a Tender Vesting Quantity and an associated Tender Vesting Quantity; The running numbers that follow "T" distinguishes between Tender Vesting Quantities under different tranches.
Name	A description of the contract		VARCHAR2(30)	M	
Settlement Account	The unique Settlement Account identifier that matches that within the NEM System.		VARCHAR2(12)	M	
Settlement Date	The Settlement Date	DD-Mon-YYYY	DATE	M	
Settlement Period	The period number the quantity relates to.		NUMBER(2)	M	1 to 48
Contract Price	The Allocated Vesting Price or		NUMBER(13,2)	M	The Allocated Vesting Price is fixed for the

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Data Item	Field Description	Field Format	Field Type and Length	M/O	Valid Field Values
	Tender Vesting Price in $/MWh				quarter, but could vary across quarters. The Tender Vesting Price could vary across tender tranches and quarters.
Contract Quantity	The Allocated Vesting Quantity or Tender Vesting Quantity This should be a positive number in kWh in each half-hour period.		NUMBER(13,2)	M	The Allocated Vesting Quantity can vary over each Settlement Interval, and the quantity cannot be negative. The Tender Vesting Quantity can vary over each Settlement Interval and the quantity cannot be negative.

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As an example, the meter records would look as shown below if the data was sent to EMC as an ASCII file:

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```
"Reference","Name","Settlement Account","Settlement Date","Settlement Period","Contract Price","Contract Quantity"
"01080701-072","Senoko Power","SNK PWR_G",01-Jul-2008,1,183.25,227229.19
"01080701-072","Senoko Power","SNK PWR_G",01-Jul-2008,2,183.25,227229.19
"01080701-072","Senoko Power","SNK PWR_G",01-Jul-2008,3,183.25,227229.19
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"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,6,181.82,22018.4
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,7,181.82,22018.4
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,8,181.82,22018.4
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,9,181.82,22018.4
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,10,181.82,22018.4
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,11,181.82,22018.4
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,12,181.82,22018.4
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,13,181.82,22018.4
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,14,181.82,22018.4
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,15,181.82,22018.4
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,16,181.82,33325.65
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,17,181.82,33325.65
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"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,19,181.82,43780.52
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,20,181.82,43780.52
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,21,181.82,43780.52
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,22,181.82,43780.52
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,23,181.82,43780.52
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,24,181.82,43780.52
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,25,181.82,43780.52
"01080701-T08","Senoko Power","SNK PWR_G",01-Jul-2008,26,181.82,43780.52
```

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4 Metering ~~Data~~data

4.1 Deadline for submission of vesting contract quantities and prices

The *MSSL* shall provide the *EMC* with *metering data* in accordance with section 2.1.1.1, Chapter 7 of the *market rules* in ASCII format via the Market Participant Server ("MPS") no later than 5:00pm, five *business days* after *trading day*.

4.2 Confirmation of receipt of metering data

Following the receipt of the *metering data*, an auto acknowledgement shall be sent to the *MSSL* to confirm the receipt of such data.

4.3 Procedure in the event of system failure for metering data submission

In the event that there is a failure in the *electronic information system*, then the *MSSL* shall submit the *metering data* to the *EMC* in CSV file format through secure email t: settdata@emcsg.com and telephone EMC-Settlement personnel to confirm receipt prior to the deadline stipulated in this *market manual*. As the last resort, the *MSSL* may submit *metering data* in CD format as the last resort.

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Format of the *metering data* in CSV file:

Table Format Example

Data Item	Field Description	Field Format	Field Type and Length	M/ O*	Valid Field Values
Quantity Type	The type of energy, injected or withdrawn from the grid.		VARCHAR2(32)	M	IEQ – Injection Energy Quantity by a Generation Registered Facility. WEQ – Withdrawal Energy Quantity for a Settlement Account. IIQ – Net Imported Intertie Quantity from the Singapore Intertie WPQ - Withdrawal Price Quantity WMQ - Withdrawal MEUC Quantity WFQ - Withdrawal Fee Quantity
Settlement Date	The Settlement Date	DD-MON-YYYY	DATE	M	
Period	The period number the quantity relates to		NUMBER	M	1 to 48
Quantity	The loss adjusted quantity of energy injected or withdrawn in to the Market in Megawatt Hours (MWh). When the quantity type is IEQ or IIQ, a negative value denotes a withdrawal; a positive value denotes an injection.		NUMBER (13,3)	M	
Node ID	The unique node identifier that matches that within the NEM System. Used for only IEQ and		VARCHAR2(32)	O	

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Data Item	Field Description	Field Format	Field Type and Length	M/ O*	Valid Field Values
	IIQ Records, otherwise field is left NULL				
Settlement Account Id	The unique Settlement Account identifier that matches that within the NEM System. Used for WEQ Records only, otherwise this field is left NULL		VARCHAR2(32)	O	

M denotes Mandatory; O denotes Optional

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As an example, the meter records would appear as shown below if they were sent to the EMC in an ASCII format:

“IEQ”,”27-MAY-2011”,”1”,”0.000”,”NODEX”,””
“IEQ”,”27-MAY-2011”,”2”,”0.000”,”NODEX”,””
“IEQ”,”27-MAY-2011”,”3”,”0.000”,”NODEX”,””
“IEQ”,”27-MAY-2011”,”4”,”0.000”,”NODEX”,””
“IEQ”,”27-MAY-2011”,”5”,”0.000”,”NODEX”,””
…….
…….
“IEQ”,”27-MAY-2011”,”48”,”0.000”,”NODEX”,””
“IIQ”,”27-MAY-2011”,”1”,”-1.037”,”NODEX”,””
“IIQ”,”27-MAY-2011”,”2”,”3.233”,”NODEX”,””
“IIQ”,”27-MAY-2011”,”3”,”-3.347”,”NODEX”,””
“IIQ”,”27-MAY-2011”,”4”,”-1.329”,”NODEX”,””
“IIQ”,”27-MAY-2011”,”5”,”-2.318”,”NODEX”,””
…….
…….
“IIQ”,”27-MAY-2011”,”48”,”3.412”,”NODEX”,””
“WEQ”,”27-MAY-2011”,”1”,”222.196”,”SETTACCX”,””
“WEQ”,”27-MAY-2011”,”2”,”222.234”,” SETTACCX”,””
“WEQ”,”27-MAY-2011”,”3”,”222.321”,” SETTACCX”,””
“WEQ”,”27-MAY-2011”,”4”,”221.312”,” SETTACCX”,””
“WEQ”,”27-MAY-2011”,”5”,”221.563”,” SETTACCX”,””
…….
…….
“WEQ”,”27-MAY-2011”,”48”,”135.137”,” SETTACCX”,””
“WPQ”,”27-MAY-2011”,”1”,”3.166”,” SETTACCX”,””
“WPQ”,”27-MAY-2011”,”1”,”4.244”,” SETTACCX”,””
“WPQ”,”27-MAY-2011”,”1”,”5.138”,” SETTACCX”,””
“WPQ”,”27-MAY-2011”,”1”,”2.345”,” SETTACCX”,””
“WPQ”,”27-MAY-2011”,”1”,”1.323”,” SETTACCX”,””
…….
…….
“WPQ”,”27-MAY-2011”,”48”,”5.622”,” SETTACCX”,””
“WMQ”,”27-MAY-2011”,”1”,”3.166”,” SETTACCX”,””
“WMQ”,”27-MAY-2011”,”2”,”4.244”,” SETTACCX”,””
“WMQ”,”27-MAY-2011”,”3”,”5.138”,” SETTACCX”,””
“WMQ”,”27-MAY-2011”,”4”,”2.345”,” SETTACCX”,””
“WMQ”,”27-MAY-2011”,”5”,”1.323”,” SETTACCX”,””
…….
…….
“WMQ”,”27-MAY-2011”,”48”,”5.622”,” SETTACCX”,””
“WFQ”,”27-MAY-2011”,”1”,”3.166”,” SETTACCX”,””
“WFQ”,”27-MAY-2011”,”1”,”4.244”,” SETTACCX”,””
“WFQ”,”27-MAY-2011”,”1”,”5.138”,” SETTACCX”,””
“WFQ”,”27-MAY-2011”,”1”,”2.345”,” SETTACCX”,””
“WFQ”,”27-MAY-2011”,”1”,”1.323”,” SETTACCX”,””
…….
…….
“WFQ”,”27-MAY-2011”,”48”,”5.622”,” SETTACCX”,””

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5 Reserve and regulation non-provision information file

5.1 Deadline for submission of reserve and regulation non-provision information file by the Power System Operator (PSO) to EMC

The *PSO* shall provide the *EMC* with the Reserve and Regulation Non-Provision Information File in accordance with Chapter 7, section 2.6.3 of the *market rules* via mechanism acceptable to the *PSO* and the *EMC*, no later than 5:00pm, of the fifth *business day* after the *trading day*.

5.2 Format of reserve and regulation non-provision information file

The file will commence with a record specifying the interface file filename. The format of these records is described in the Tables below.

Name	Data Type	Values	Description	Action for cases where data is missing or not as expected
Record Type	Text(4)	"FNAM"	Identifies this record format	File will be rejected
Filename	Text(35)	Any valid filename	Identifies the file containing this record	File will be rejected

Name	Data Type	Values	Description	Action for cases where data is missing or not as expected
Record Type	Text(4)	"DATE"	Identifies this record format	File will be rejected
Date	Text(8)	YYYYMMDD	Specifies the target trading date the information relates to.	File will be rejected

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Name	Data Type	Values	Description	Action for cases where data is missing or not as expected
Record Type	Text(4)	"HEAD"	Identifies this record format	File will be rejected
Column Heading (this field is repeated as required)	Text(*n*)	Any text value	Describes the corresponding column in the subsequent data records, the field width should equal that of the corresponding data column.	File will be rejected

Each file will be terminated by an end-of-file record. The format of these records is described below.

Name	Data Type	Values	Description	Action for cases where data is missing or not as expected
Record Type	Text(3)	"EOF "	Identifies this record format	File will be rejected

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The record structure for line item data is described below.

Name	Data Type	Values	Description	Action for cases where data is missing or not as expected
Record Type	Text(4)	"UPRR"	Identifies this record format – 'Unable to Provide Reserves/Regulation'.	File will be rejected
Trading Period	Text(2)	01-48	Specifies the target trading period the information relates to.	File will be rejected
Time	Text(11)	HH:MM-HH:MM	Specifies the target trading period timing the information relates to.	File will be rejected This information will not be used for processing and there will be no validation applied to counter check with period data stated in the earlier field
B1	Text(8)	Any text value	Uniquely identifies the generation unit	If it does not match against standing data, it will be ignored.
B2	Text(8)	Any text value		
B3	Text(8)	Any text value		
Ancillary Type - Regulation	Text(3)	'REG'	Specifies the ancillary type	Leave it blank if it is not this type
Reserve Class - Primary	Text(3)	'PRI'	Specifies the reserve class type.	Leave it blank if it is not this type
Reserve Class - Secondary	Text(3)	'SEC'	Specifies the reserve class type.	Leave it blank if it is not this type
Reserve Class - Contingency	Text(3)	'CON'	Specifies the reserve class type.	Leave it blank if it is not this type

As an example, the Reserve and Regulation Non-Provision Information File will appear as shown below:

```
FNAM UPRRYYYYMMDDHHmmss.txt
DATE YYYYMMDD
HEAD PD HH:MM-HH:MM B1        B2        B3        REG PRI SEC CON
UPRR 01 00:00-00:30 POWSERY   CCP S1    SERCCP1   REG
UPRR 01 00:00-00:30 TUASPOW   STAGE1    TUA G1              SEC
UPRR 09 04:00-04:30 AGCKMCG   KEPPEL    KMCBLK1       PRI
UPRR 10 04:30-05:00 AGCKMCG   KEPPEL    KMCBLK1       PRI
UPRR 35 17:00-17:30 TUASPOW   STAGE1    TUA G1              SEC CON
EOF
```

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~~5~~6 Communication of settlement information

~~5.1~~6.1 Process for communication regarding settlement between market participants and the EMC

All communication between *market participants* and the *EMC* relating to the *settlement* process shall use the *electronic information system* in accordance with the table below.

~~5.2~~6.2 Process for communication regarding settlement in the event of electronic information system failure

In the event of a failure of the *electronic information system*, the *EMC* or the *market participant* shall communicate by facsimile or in accordance with the table below.

~~5.3~~6.3 Summary of settlement information communication processes

No	Type of issue	From	To	Means of Communications
1	Enquiries on *preliminary* and *final settlement statement* and *invoices*	MSSL MP	EMC	Email to email address: settlement@emcsg.com Facsimile and phone EMC-Settlement personnel to confirm receipt (alternate)
2	Notice of disagreement on *preliminary* and *final settlement statements*	MSSL MP	EMC	Email to email address: settlement@emcsg.com Facsimile and phone EMC-Settlement personnel to confirm receipt (alternate)
3	General settlement enquiries	MSSL MP	EMC	Email to email address: settlement@emcsg.com Facsimile and phone EMC-Settlement personnel to confirm receipt (alternate)

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~~6~~7 Settlement statements

~~6.1~~7.1 Deadline for issuing preliminary and final settlement statements

The *EMC* shall issue a *preliminary settlement statement* on the sixth *business day* after the *trading day* and the *final settlement statement* on the tenth business day after the *trading day*, in accordance with sections 5.2.1 and section 5.2.3, Chapter 7 of the *market rules.*

~~6.2~~7.2 Method of issuing preliminary and final settlement statements

Preliminary and *final settlement statements* will be posted on each *market participant's* private website as follows:

Preliminary settlement statement:	*Trading day* + 6 *business days*, 5:00pm
Final settlement statement:	*Trading day* + 10 *business days*, 5:00pm

The *EMC* shall identify and communicate to *market participants* the precise nature and root cause of any late-delivery of the *preliminary and final settlement statement* and/ or shall use its reasonable endeavours to rectify the situation or take any other steps as may be reasonably required.

~~6.3~~7.3 Failure to receive preliminary or final settlement statement

In the event that a *market participant* does not see the *preliminary* or *final settlement statement* by the stipulated deadline, the *market participant* shall inform the *EMC*-Settlement personnel by email addressed to settlement@emcsg.com and telephone *EMC*-Settlement personnel.

Upon receiving notification from the *market participant*, the *EMC*-Settlement personnel shall re-post the relevant *settlement statement* onto the *market participant's* private website.

The *EMC*-Settlement personnel will then inform the *market participant* of the re-posting by email and telephone the *market participant*.

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~~7~~8 Invoices

~~7.1~~Issuance of invoices

~~7.2~~8.1

8.1.1 ~~7.1.1~~ The *EMC* has undertaken to perform self-billing for goods and services tax for goods and services traded or settled in the *wholesale electricity market.* The provision in this section is to comply with the requirement of the Inland Revenue Authority of Singapore.

~~7~~8.1.2 The *EMC* shall issue *invoices* to *market participants* on the tenth *business day* after the *trading day*. Where applicable, *invoices* include tax invoices and buyer-created tax invoices issued on *market participants*' behalf.

~~7~~8.1.3 *Market participants* shall:

a) not issue tax invoices to the *EMC* if a buyer-created tax invoice has been issued by the *EMC* on their behalf; and

b) notify the *EMC* immediately, if their GST registration is cancelled or if they are issued with a new GST registration number.

~~7.2~~8.2 Method of issuing invoices

The *invoice* will be sent to each *market participant* by secured e-mail in accordance with the time stated below:

Invoice:	*Trading day* + 10 *business days*, 5:00 pm

If secured e-mail is not successful, the *invoice* will be sent by facsimile and followed by ordinary mail in accordance with the time stated above.

The *EMC* shall identify and communicate to the *market participants* the precise nature and root cause of any late-delivery of the settlement *invoice* and/ or shall use its reasonable endeavours to rectify the situation or take any other steps as may be reasonably required.

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~~7.3~~8.3 Failure to receive invoice

In the event that the *market participant* does not receive an *invoice* by the stipulated deadline, the *market participant* shall inform the *EMC*-Settlement personnel by email addressed to settlement@emcsg.com and telephone the *EMC*-Settlement personnel.

Upon receiving notification from the *market participant*, the *EMC*-Settlement personnel shall re-send the *invoice* by secured e-mail. If secured e-mail is not successful, the *invoice* will be sent by facsimile and followed by ordinary mail. The *EMC*-Settlement personnel will then telephone the *market participant* to confirm receipt.

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~~8~~9 Notice of disagreement

~~8.1~~9.1 Notice of disagreement on preliminary settlement statement

Market participants shall have three *business days* from the day that the *preliminary settlement statement* is issued, in accordance with section 5.2.2, Chapter 7 of the *market rules*, to notify the *EMC*-Settlement personnel of errors in the *preliminary settlement statement* in accordance with section 5.5 of the *market rules*.

The deadline for such a *notice of disagreement* to reach the *EMC*-Settlement personnel is as follows:

Notice of disagreement:	*Trading day* + 9 *business days*, 5:00pm

~~8.2~~9.2 Notice of disagreement on final settlement statement

[Subject to rule change on section 5.6.5 and 5.6.6, Chapter 7]

No *market participant* may submit a *notice of disagreement* pertaining to a *final settlement statement* if, in accordance with section 5.6.6, Chapter 7 of the *market rules*:

a) the dispute relates to the accuracy of metering data and more than forty *business days* have elapsed since the date on which the *final settlement statement* to which the *notice of disagreement* relates was issued; or

b) in all other cases, more than twenty *business days* have elapsed since the date on which the *final settlement statement* to which the notice of disagreement relates was issued.

~~8.3~~9.3 Conditions for submitting a notice of disagreement on final settlement statement

[Subject to rule change on section 5.6.5 and 5.6.6, Chapter 7]

A *market participant* may submit a *notice of disagreement* pertaining to a *final settlement statement p*ursuant to section 5.6.5, Chapter 7 of the *market rules*, if the subject matter of the notice is not:

a) in respect of the calculation of the element referred to in section 5.5.9.1 to 5.5.9.3 of section 5.6.5, Chapter 7 of the *market rules*; or

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b) identical to the subject matter filed by the *market participant* under section 5.5.2. Chapter 7 of the *market rules*; or

c) the same subject matter that has been investigated and closed pursuant to section 5.5.2 and 5.5.6, Chapter 7 of the *market rules*.

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~~8.4~~9.4 Cost incurred during investigation

In the event that the *EMC* concludes that no errors have occurred in the *preliminary* or *final settlement statements*, and has incurred costs during the investigation, such cost will be passed on as an out-of-pocket expense to the *market participant* who submitted the *notice of disagreement*.

The *EMC* shall notify the *market participant* of such out-of-pocket expenses and include the out-of-pocket expenses in the next available *final settlement statement*.

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~~8.5~~9.5 Format of notice of disagreement

A *market participant* shall submit a *notice of disagreement* in the format below along with supporting documents to settlement@emcsg.com.

[Note: This form will eventually be downloadable from the EMC Website, www.emcsg.com]

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Notice of Disagreement

Submitted by :			
Company :			
Settlement A/C :		**Run Identifier :**	
Settlement Date :		**Run Date :**	
Run Type :			

Description of disagreement

Proposed Adjustment to the data used to calculate any relevant settlement amount

Proposed Correction to any calculation of the relevant settlement amount

The market participant must provide relevant materials to support this Notice.

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~~9~~10 Electronic funds transfer

~~9.1~~10.1 Bank accounts

The *EMC* shall appoint a clearing bank to manage the clearing and *settlement* of the Singapore *wholesale electricity market*.

~~9.1.1~~10.1.1 The EMC's bank account details

The *EMC* maintains *bank accounts* with the clearing bank to facilitate the clearing and *settlement* process.

The *EMC*'s *bank account* information will be made available on the *EMC* website, www.emcsg.com.

~~9.1.2~~10.1.2 Market participant bank accounts

Each *market participant* shall be required to open and maintain a *bank account* with the clearing bank appointed by the *EMC* and specified in ~~8~~10.1.1 of this *market manual*.

Each *market participant* shall arrange with the clearing bank to authorize the *EMC* to direct debit the said *bank account* to facilitate the clearing and settlement of NEM.

Each *market participant* shall inform the *EMC* of all applicable information (*bank account* number inclusive) pursuant to section 5.16.11, Chapter 7 of the *market rules*.

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~~9.2~~10.2 Electronic funds transfer process

The *EMC* shall issue an *invoice* and *electronic funds transfer* instructions to the clearing bank on the tenth *business day* after each *trading day* in accordance with sections 5.2.3 and 5.2.4, Chapter 7 of the *market rules.*

The *EMC* shall instruct the clearing bank as follows:

a) For a *market participant* owing to the *EMC*, the clearing bank shall be instructed to debit the *market participant's bank account* for the specified dollar amounts on the *market participant payment date*, pursuant to section 5.8.2, Chapter 7 of the *market rules*.

   The *market participant payment date* shall be the twentieth day after *trading day* subject to *business day* convention.

   [Explanatory note: Business day convention means that if the stipulated day falls on a non-business day, the required action will take place on the following business day.]

b) For a *market participant* owed by the *EMC*, the clearing bank shall be instructed to credit the *bank account* of the *market participant* for the specified dollar amount on the *EMC payment date*, pursuant to section 5.8.2, Chapter 7 of the *market rules*.

   The *EMC payment date* shall be the twenty-first day after the trading day subject to business day convention.

A *market participant* shall pay the full amount owing to the *EMC* and ensure that there are sufficient funds in the *market participant*'s *bank account* with the clearing bank, prior to the close of banking business 5:00pm, on the twentieth day after the *trading day* subject to business day convention.

The clearing bank, based on the "direct debit authorization" arrangement in place, shall debit the *market participant*'s *bank account* and credit the *EMC bank account* on the close of the twentieth day after the trading day subject to business day convention.

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The following day after the *market participant* payment date, the EMC shall perform reconciliation to:

- ensure all outgoing funds are paid.
- ensure all incoming funds are received.
- ensure there are sufficient funds to payment.
- investigate and take necessary actions if there are discrepancies or insufficient funds for payment.

The clearing bank shall debit the *EMC bank account* and credit the *market participant*'s *bank account* by the close of the twenty-first day after the *trading day* subject to business day convention.

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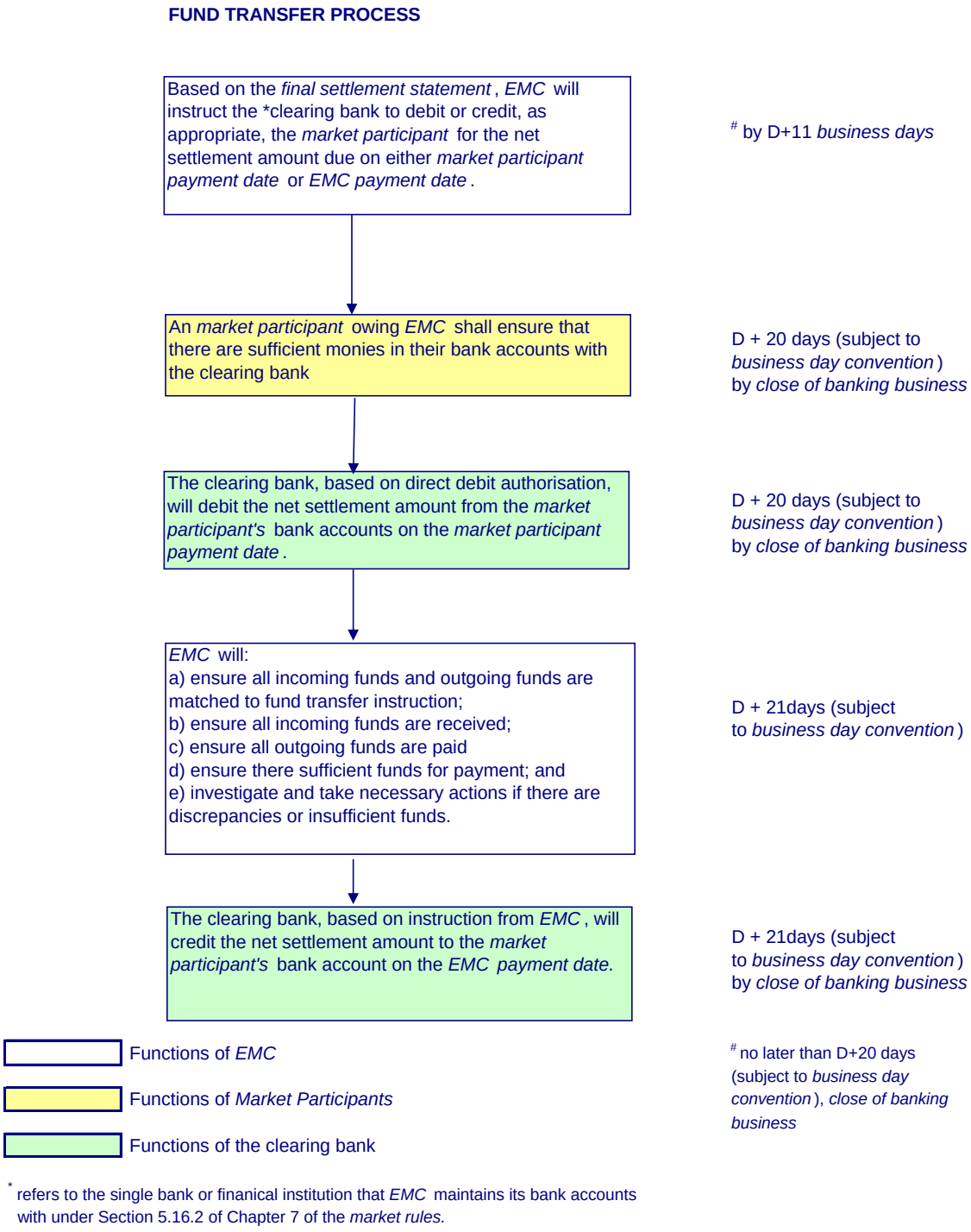
~~9.3~~10.3 Flowchart of electronic funds transfer process



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~~10~~11 Set up of settlement account

Any interested party who wishes to participate in the *wholesale electricity market* will register with the *EMC*.

The *market participant* shall be required to provide the relevant information under the registration form or upon the request by the *EMC* to set up the *settlement account* and *bank account*. The required documents are as follows:

- *Market participant's bank account* details with the Clearing Bank
- "Direct Debit Authorisation" form duly completed and signed by the *market participant*. This form is required to authorize the *EMC* to debit/credit the *market participant's* account with the Clearing Bank for the settlement of *physical services* and charges of the *electricity market*.
- A list of the meter ids (applicable to *market participants* who are registering their *generation facilities)*.

Upon receipt of the required documentations, the *EMC* shall:

- set up the *settlement account* in its *settlement* system and assign *settlement id;*
- assign MNNs to meter ids where applicable;
- submit "Direct Debit Authorisation" form, duly completed and signed by the *market participant*, to the Clearing Bank to activate the auto-debit/credit service; and
- advise the *MSSL* of the *market participant* of the settlement id and MNNs in accordance with chapter 7 of this *market manual*.

The *MSSL* upon receipt of the list of meter ids and the related MNNs, shall verify the meter ids and confirm to the *EMC* the accuracy of the meter ids.

The Clearing Bank upon receipt of the completed and signed "Direct Debit Authorisation" from the *EMC*, shall activate the auto-debit on the *market participant's bank account* and advise the *EMC*.

Upon receipt of confirmation from the *MSSL* and the Clearing Bank, the *EMC* shall:

- advise the *settlement id* to the *market participant; and*
- advise the MNNs to the *market participant* who has registered its *generation facilities.*

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~~11~~12 EMC-settlement personnel contact details

Contact:	Settlement personnel
Address:	Market Operations – Settlement Energy Market Company 238A Thomson Road #11-01 Novena Square Tower A Singapore 307684
Telephone:	+65 6779 3000
Facsimile:	+65 6779 3030
Website:	www.emcsg.com
For **settlement enquiries**:	email to settlement@emcsg.com
For **submission of settlement data**:	email to settdata@emcsg.com

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