

**MINUTES OF THE RULES CHANGE PANEL
49th MEETING
HELD ON MONDAY, 10 MAY 2010 AT 9.35AM
AT ENERGY MARKET CO. PTE LTD
238A THOMSON ROAD #11-01
NOVENA SQUARE, SINGAPORE 307684**

Present:	Dave Carlson Luke Peacocke Daniel Lee Chan Hung Kwan Dallon Kay Lawrence Lee	Kenneth Lim Dr. Goh Bee Hua Philip Tan Michael Lim Robin Langdale Ng Meng Poh
Absent with apologies	Yeo Lai Hin	Annie Tan
In Attendance: (EMC)	Paul Poh Mok Xin Ying Henry Wee	Tan Liang Ching Nerine Teo Wang Jing

1.0 Notice of Meeting

The Chairman called the meeting to order at 9.35am. The Notice and Agenda of the meeting were taken as read.

2.0 Appointment of Representative of the Generation Licensee class of Market Participant to the Rules Change Panel

The Panel was informed that the EMC Board, at their 25 March 2010 meeting, approved the appointment of Mr. Daniel Lee Kong Leng of Power Seraya Ltd to the Rules Change Panel, with effect from 01 April 2010 to 31 December 2011.

2.1 The Chairman welcomed Mr. Daniel Lee to the 49th RCP meeting.

3.0 Confirmation of Minutes of the 48th Rules Change Panel Meeting

The Minutes of the 48th Rules Change Panel meeting held on Tuesday, 9 March 2010 was tabled.

There being no amendments to the Minutes, the Rules Change Panel approved the Minutes.

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4.0 Matters Arising

The Panel noted that, as outlined, the follow-up action was completed on the matters arising.

**4.1 Item 1.2 – Modeling of Multi-unit Contingency Risk
(Paper No. EMC/RCP/47/2010/CP17)**

The Panel requested the PSO to provide more information on the RAF method. However, the PSO has yet to respond to the Panel's request.

PSO

4.2 Item 3.0 – Rules Change Workplan Status Update

Mr. Peacocke requested EMC to consider using the wholesale market settlement and credit support arrangements for the payment of the vesting relief option fee from non portfolio generators to portfolio generators. Mr. Poh informed that EMC had discussed this issue with the EMA, whose decision was to continue with the current practice of non portfolio generators paying the vesting relief option fee directly to portfolio generators.

4.2.1 On a Panel's member's request for the reason(s) for EMA's decision, Mr. Peacocke volunteered that he would check with EMA and advise the generators.

Mr
Peacocke

5.0 Monitoring List

The Panel noted the contents of the paper.

Mr. Poh highlighted that from Q2 to Q4 2010, the EMA tendered out 3% of the vesting contracts to meet non-contestable load. Mr. Philip Tan requested for the Monitoring List to make clear that the tendered vesting quantity was 3% of System Demand.

EMC

Mr. Kay requested EMC to include an indication for each table whether the monitoring statistic was within or exceeding the acceptable thresholds.

EMC

6.0 Summary of Outstanding Rule Changes

The Panel noted the contents of the paper.

7.0 Rules Change Workplan Status Update

The Panel noted the contents of the paper.

Mr. Kay suggested to include a column to show the date when each issue was first raised

EMC

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8.0 Amendment to PSO Budget
(Paper No. EMC/RCP/49/2010/293)

Mr. Tan Liang Ching informed that the PSO proposed to remove the requirement for the PSO to submit its proposed expenditure and revenue requirements and schedules of fees to the Rules Change Panel for review 90 days before the FY. Instead these will be submitted to the RCP for information 30 days before the FY.

The Panel felt that with the limited information provided to the Panel in reviewing past PSO budgets, it may give the wrong impression that the RCP is already providing a meaningful layer of checks and balance.

The Panel stated that if PSO's actual expenditure falls over or under the budget, there is currently no provision in the market rules for the over/under recovery of the budget. The Panel recommended that this should be taken into consideration.

Mr. Philip Tan noted that the PSO proposed to inform the Rules Change Panel and Market Participants of the proposed expenditure and fees. He queried if it would be useful to release this information to the public, since they will ultimately be bearing these costs.

Dr. Goh stated that if the information is provided to the RCP for review, then that information should be detailed.

The Chairman commented that although the PSO was a government body, it was determined that the PSO's fee would be charged to the industry. It was then determined that the industry should be involved in the PSO budget's consultation process and hence the RCP's involvement.

Mr. Kenneth Lim asked if it was feasible for the government to fund the PSO fees. In this case, there may not be a need for RCP's involvement, and the PSO could go through the due process of getting MTI's approval for its budget.

Mr. Daniel Lee said that the PSO's budget should be opened up for consultation, rather than just for the information of the RCP.

The Panel voted to support the proposed rule change to remove the requirement for the Panel to review PSO budget, subject to:

1. the PSO instead publish its proposed expenditure and revenue requirements and schedule of the fees to the Market Participants and the public for comments, and
2. PSO's schedule of fees taking into account the over/under recovery of the previous year's expenditure

PSO

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9.0 Review of Application Forms for Market Participant Registration and Market Support Services Licensee Authorisation (Paper No. EMC/RCP/49/2010/295)

Ms. Wang Jing informed the Panel that EMC proposed to amend the Market Manual-Market Administration (Part 1), which consists of the “Application Form for Market Participant Registration” and the “Application Form for Authorisation of Market Support Services Licensee” to:

- a) provide better clarity on the MP registration / MSSL authorisation process;
- b) correctly reflect the existing registration / authorisation requirements; and
- c) ensure the forms are consistent with the Market Rules and other Market Manuals

The Panel noted the contents of the paper and supported the amendments to the Market Manual-Market Administration (Part 1) which consists of the “Application Form for Market Participant Registration” and the “Application Form for Authorisation of Market Support Services Licensee”, and to certain sections of the Market Rules.

10.0 Appointment of Technical Working Group Member (Paper No. EMC/RCP/49/2010/11)

The Panel was informed that the Technical Working Group (TWG) is an industry-resourced group appointed by the RCP to assist it in examining technical changes to the Market Rules. Such changes typically relate to the formulation used in the Market Clearing Engine (MCE) for dispatch and price discovery in the Singapore wholesale electricity market.

The PSO advised that Mr. Kwok Foo Seng, currently the Power System Operator (PSO) representative on the Technical Working Group (TWG), would be resigning from the TWG with effect from 31 May 2011. As the TWG Governance Arrangement provides for the PSO representative to be nominated by the PSO, only the PSO may nominate a replacement for Mr. Kwok.

The PSO has nominated Mr. Loh Poh Soon, Assistant Director (System Stability & Planning Department) in the Power System Operation Division of Energy Market Authority, to replace Mr. Kwok as the PSO representative on the TWG from 31 May 2009 to 20 January 2011.

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The Panel approved the appointment of Mr. Loh Poh Soon as the PSO representative on the TWG from 31 May 2009 to 20 January 2011.

Mr Daniel Lee informed that Mr James Ooi a TWG member had recently resigned from Seraya.

Mr Daniel Lee was advised that Seraya should submit Mr James Ooi resignation so that nominations can be called from MPs.

Daniel
Lee

11.0 Modeling of Multi-Unit Contingency Risk (Paper No. EMC/RCP/49/2010/CP17)

Ms. Wang Jing presented the PSO and EMC's conceptual proposal to model multi-unit contingency (MUC) risk into reserve requirement setting and the resultant reserve cost allocation in the SWEM.

The Panel was informed that EMC sought the EMA's view whether the reserve costs arising from the proposal should be charged to the Transmission Licensee.

The EMA was of the view that

- whether or not SPPA should bear any reserve cost as proposed by EMC depends on whether the EMC's proposal conforms to the "causer-pays principle";
- In any case, SPPA should be subject to the market rules as section 2 of the Electricity Act defines "market participant" to include the transmission licensee;
- the market rules have the effect of a contract between each "market participant" and the Market Company

Mr. Chan Hung Kwan explained why the Transmission Licensee is not the causer in the case of Type 2 MUC:

- a) If PSO can identify the Type 2 MUC situation, they should inform SPPA. SPPA, having fulfilled its obligation of "N-1" under the Transmission Code, will then request the relevant genco to pay for a third (or additional) transmission line. If the relevant genco agrees to do so, the Type 2 MUC situation will no longer exist.
- b) In connection to the scenario described in Item (a) above, if the relevant genco refuses to pay for the third transmission line, the causer will be the relevant genco in the Type 2 MUC situation.

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Mr. Daniel Lee pointed out that there was a standard connection charge of \$50,000/MW which was to cover the costs of connection for generation facilities and disagreed that gencos would need to pay for the third transmission line or be the causers in Type 2 MUC situations.

Mr Chan expressed concern of potential conflict between the obligations required of the Transmission Licensee under the Transmission Code and the Market Rules. The MUC situation is a case in point.

Mr Chan also asked whether the existing RAF could be used to deal with MUC situations, given that the probability of occurrence of such situations might be low. He added that this would be a more cost effective option that could be further explored.

Dr Goh opined that since with 2 transmission lines, there is already a N-1 contingency. If 1 line is not in service, then would a N-1 situation occur, in which case SPPA could still be the causer.

Mr. Ng Meng Poh stated that this is complicated because the MUC will have other unintended consequences. He asked if there is verification of the probability factor on RAF used in the CBA study because it seems quite a large number and an independent check is required.

Mr. Poh informed that in the actual cases provided by PSO for the CBA study, no RAF had been applied. PSO requested that EMC do a comparison of the MUC method and RAF method. PSO provided the RAF numbers for the comparison study.

Mr. Philip Tan said that the RCP had in a previous meeting requested PSO to provide the methodology on how RAF is determined.

The Chairman informed that the MUC is supposed to be an accurate way of modelling the reserve requirement on the system and provide a more targeted way of allocating the cost of reserve compared with the RAF method. .

Mr. Langdale said that implementing the MUC approach to reserve requirements should motivate some GRF's to take action to eliminate the MUC situation, thereby reducing their reserve cost and reducing total reserve cost to the market.

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The Panel then asked the PSO to make a presentation to the RCP to explain how the current RAF is applied.

PSO

The Chairman also requested that gencos share their views on SPPA's view of Genco being required to pay for third transmission line in the case of Type 2 MUC.

Gencos

(Mr. Ng Meng Poh sent his apologies and took leave of the meeting)

Mr. Peacocke noted that EMC CBA study indicated that there is net cost of \$33m to implement the MUC .

12.0 Compensation for Excess Regulation

(Paper No. EMC/RCP/49/2010/CP22)

Ms. Nerine Teo informed that at the 48th RCP Meeting, the RCP agreed to support EMC's recommendation not to implement a compensation regime for regulation over-provision but to consider whether to introduce a Regulation Effectiveness Factor (REF) approach.

The RCP then requested for the following information:

- a. Compute the proposed Regulation Effectiveness Factor (REF) for Generation Registered Facilities (GRFs) using Gross Metering data for 2009 provided by SP Services.
- b. Evaluate the cost and effort required in monitoring system-wide excess regulation provision data and computing REF

The proposed REF methodology can be determined in 2 ways:

1. Based on PSO's **technical assessment** of each individual GRF's effectiveness if feasible
2. Based on a **historical assessment** of that GRF's regulation provision pattern

Ms. Teo then presented (a) above using the historical assessment method. She pointed out the following objectives that the computed REF value should be characterised by:

- a) REF of an individual GRF should reflect the relative effectiveness of that GRF in providing regulation compared to other GRFs.
- b) GRFs that provide regulation in directions contrary to the system-wide regulation required should have a lower REF for that dispatch period
- c) Final averaged REF computed for the purposes of regulation payments should not require GRFs to pay for regulation

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Ms. Teo also presented that there are several steps required to compute a single average REF, as follows:

- i. Compute an REF for each GRF for each dispatch period for one year using historical data that meets pre-determined criteria
- ii. Transform each of these REFs computed in (i) using a Hyperbolic Tangent function
- iii. For a given GRF, compute an average REF from transformed REFs across all dispatch periods in a given year
- iv. Apply each GRF's averaged transformed REF to determine regulation payments in future dispatch periods

Mr. Kay asked for the rationale for the exclusion of periods with forced outages. Ms. Teo replied that in instances where there are forced outages of >10MW the generators could be responding to reserves rather than regulation. If a GRF is not scheduled for regulation in a given dispatch period, it will not have a computed REF for that dispatch period.

Mr. Kay also asked what is the likelihood of the GRF being assigned a factor of 2 or even greater. Ms. Teo said the methodology is applied on the historical gross metering data for 2009 and these gave a varied range of REFs as shown in the table below.

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Summary of Averaged Transformed REF of GRFs that provided regulation in 2009

GRF	Effective REF Periods	Average REF before transformation	Max REF before transformation	Min REF before transformation	Averaged Transformed REF
1	30	-22.747	424.778	-671.183	0.459
2	16359	0.0176	4348.971	-12825.81	0.579
3	15998	-0.820	2616.740	-9435.372	0.519
4	15843	-1.869	39.179	-27.688	0.248
5	15783	-9.383	70.006	-99.033	0.212
6	14312	1.798767541	6529.693	-2933.231	0.591
7	15006	2.193	7695.486	-5260.019	0.596
8	13211	3.577	20751.223	-2900.676	0.606
9	11966	-0.508	16590.257	-40899.991	0.517
10	12191	1.664	4974.960	-884.288	0.589
11	3083	0.943	565.78808	-628	0.628
12	4977	0.662	727.594	-4795.122	0.658
13	4992	6.332	18034.762	-877.164	0.674
14	7457	2.258	8084.315	-1217.626	0.568
15	14223	0.879	20798.824	-3743.460	0.522
16	16284	-0.236	5887.036	-3842.358	0.530
17	5434	0.103	340.235	-863.283	0.528
18	2778	-0.813	601.116	-913.737	0.479
19	10620	10.113	73315.20	-2465.845	0.544
20	14575	6.054	19133.52	-2017.162	0.552
21	16213	4.100	26845.5	-14546.667	0.596
22	2897	0.544	1574.553	-438.413	0.534
23	2380	-0.017	347.520	-354.188	0.548
24	11302	12.676	124833.082	-16326.975	0.590
25	1899	-1.464	2358.768	-6951.621	0.577

Mr. Philip Tan requested EMC to add maximum REF after and the minimum REF after transformation.

EMC

Ms. Teo informed that the effort and cost required to compute REFs are as follows:

One time cost of \$32,000	–	SP Services
Recurring cost of \$8750	-	\$6750 by EMC
	-	\$2000 SP Services

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The system cost of implementation has not been calculated and will be estimated if the RCP decides to further refine the methodology.

Mr. Tan said that this is one method to compute effectiveness of regulation when looking at the end period and the actual meter. He noted that EMC did not take into consideration the second-by-second interval but agreed that this method would be too tedious. He asked EMC to look at commissioning units and address how REFs can be assigned to these units given that they will not have historical data.

Mr. Poh informed that EMC will consider this if the RCP decides to further analyse the REF.

Mr. Kay asked EMC to describe if the behaviour of GRFs would change with the application of REFs. Mr. Carlson informed that it is a statistical movement and EMC is not able to assess whether this proposed methodology is appropriate or not. Mr. Poh added that if the generator has an REF of 1 and another has an REF of 0.7, EMC cannot provide the answer whether the generator with a REF of 0.7 can improve on its REF.

The Chairman put to the vote on whether the Panel should pursue and refine the concept of the REF approach.

The following VOTED to continue with the approach:

Mr. Dallon Kay, representative of the trader class of market participant
Mr. Philip Tan, representative of generation licensee
Mr. Luke Peacocke, representative of generation licensee
Mr. Daniel Lee, representative of generation licensee
Dr. Goh Bee Hua, representative of consumers of electricity in Singapore

The following VOTED NOT to continue with the approach:

Mr. Kenneth Lim, representative of EMC
Mr. Lawrence Lee, representative of market support services licensee
Mr. Chan Hung Kwan, representative of transmission licensee
Mr. Michael Lim, representative of consumers of electricity in Singapore
Mr. Robin Langdale, person experienced in financial matters in Singapore

Given the equal number of votes, the Panel requested the PSO to provide information on how the AGC works in relation to regulation to better understanding the situation before the panel decides whether to pursue the REF method further.

PSO

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System-wide Excess Regulation Amount

At the 48th RCP meeting, EMC presented a summary of system-wide excess regulation for the period of January 2009 to June 2009, including the total excess regulation amount (in both MW and dollar-terms). The RCP then requested that EMC evaluate the cost and effort involved in reporting this set of data on an on-going basis to the RCP.

Ms. Teo presented a summary of system-wide excess regulation provision for the periods between 1st July 2009 to 31 December 2009.

No.	Data Type	Excess Regulation Up	Excess Regulation Down	Total (Regulation Up and Regulation Down)
1	No of Periods with Excess Regulation	517 (191)	96 (163)	613 (354)
2	Total Number of Periods with Outages that has excess regulation	1 (1)	2 (2)	3 (3)
3	No of Periods with Excess Regulation (excl. Outages)	516 (190)	94 (161)	610 (351)
4	Total Number of Dispatch Periods (excl. Periods with outages)	8784 (8685)		
5	System Wide Excess Regulation Periods (%)	5.88% (2.19%)	1.09% (1.85%)	6.98% (4.04%)
6	Average Excess Regulation Amount (in MW) as a % of Regulation Requirement	19.21% (34.87%)	5.71% (25.52%)	16.33% (30.83%)
7	Total Regulation Payments	\$38,770,862.04 (\$21,988,000)		
8	Total Excess Regulation Compensation	\$581,546.37 (\$127,860.00)	\$22,715.17 (\$63,930.00)	\$604,261.54 (\$195,139.41)
9	Total Excess Regulation Compensation (as a % of Total Regulation Payments)	1.5% (0.6%)	0.06% (0.29%)	1.56% (0.89%)

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The Panel agreed that this system wide excess regulation should be monitored every 6 months. The computation of this data would require PSO to submit “System-wide Actual Online Generation” data to EMC every 6 months.

EMC/
PSO

13.0 Terms of Reference for Consultancy Services to Review Alternative Reserve Payment Methodologies between Interruptible Loads (ILs) and Gencos (Paper No. EMC/RCP/49/2010/CP25)

During the RCP Workplan Prioritisation exercise, the issue “Engaging Academic Institutions to look at alternative reserve payment methodologies between Interruptible Loads (ILs) and Gencos” was prioritised to be addressed in FY10/11.

Mr. Tan Liang Ching presented the proposed Terms of Reference for the study for the RCP’s comments and endorsement. The TORs will be subsequently incorporated into the Request for Proposal document for the consultants.

Mr. Kay requested that the RCP be given a short-list of the prospective consultants. He also suggested that the scope of the study be expanded to look at the applicability of demand response programs in other markets in Singapore’s context.

In response to Mr. Kay’s query on the selection criteria for the consultants, Mr. Poh informed that when the consultants have responded to the RFP, EMC will present the recommended consultant with the basis of selection to the RCP for endorsement.

EMC

Mr. Philip Tan highlighted that the EMA already has existing committees to look other aspects of ILs and the consultant is to look at alternative reserve payment methodology and should not deviate further.

Mr. Kay was of the view that it was agreed that reserve from IL and generators should be treated similarly when IL was introduced in 2004 He requested for the minutes on the IL introduction to be circulated to the Panel

EMC

Mr. Kay asked how the Panel can provide feedback to the consultant’s proposal. The Chairman noted that the consultant will submit a draft report before finalising its study. The RCP can provide its view on the draft report.

EMC

Mr. Daniel Lee and Mr. Langdale advised that there is a need to get the PSO’s availability for the study.

The Chairman requested the Panel to submit to EMC and other Panel members if they have additional comments on the Terms of Reference.

There being no other matters, the meeting ended at 1.20pm.

Dave E Carlson
Chairman

Minutes taken by:
Eunice Koh
Senior Executive – Corp. Secretariat