

**MINUTES OF THE RULES CHANGE PANEL
47th MEETING
HELD ON TUESDAY, 5 JANUARY 2010 AT 9.35AM
AT ENERGY MARKET CO. PTE LTD
238A THOMSON ROAD #11-01
NOVENA SQUARE, SINGAPORE 307684**

Present: Dave Carlson Kenneth Lim
Yeo Lai Hin Brendan Wauters
Sim Meng Khuan Philip Tan
Chan Hung Kwan Michael Lim
Annie Tan Dallon Kay
Robin Langdale Ng Meng Poh
Lawrence Lee

Absent with Dr. Goh Bee Hua
apologies

In Attendance: Paul Poh Tan Liang Ching
(EMC) Mok Xin Ying Nerine Teo
Henry Wee 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 Confirmation of Minutes of the 46th Rules Change Panel Meeting

The Minutes of the 46th Rules Change Panel meeting held on Tuesday, 3 November 2009 was tabled.

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

3.0 Matters Arising

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

3.1 Item 3.0 – Compensation for excess regulation (Paper No. EMC/RCP/46/2009/CP22)

EMC is currently evaluating the data for the provision of excess regulation and the results will be presented to the RCP when completed. EMC

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4.0 Monitoring List

The Panel noted the contents of the paper.

5.0 Summary of Outstanding Rule Changes

The Panel noted the contents of the paper.

6.0 Rules Change Workplan Status Update

The Panel noted the contents of the paper.

7.0 PSO Proposed Expenditure and Fees FY10/11 commencing 1 April 2010 (Paper No. EMC/RCP/47/2010/06)

Mr. Yeo Lai Hin informed the Panel that he would abstain from the discussion on the PSO's Budget except to answer any questions on behalf of the PSO.

The Panel reviewed and noted the PSO's Proposed Expenditure and Fees for the Fiscal Year FY2010/11 commencing 1 April 2010.

The Chairman informed that in the past years, the Panel wrote to the PSO requesting further details on the PSO budget. He raised this issue to the Chief Executive of EMA, who responded that the information requested on the allocation of common cost areas to the PSO related to the EMA's budget. Since EMA's budget is subject to ministerial approval, it may not be constructive for the Panel to comment on these aspects of the PSO's budget.

The Chairman further informed that the EMA will be proposing a rule change to modify the RCP's obligations under the market rules to review the PSO Budget. The Panel noted the Authority's intent.

Corporate Services

Mr. Langdale noted that the proposed budget of \$4.945 million comprise corporate services provided by EMA HQ. He asked if the Panel could reiterate the Panel's previous discussions to seek clarity on the total costs of EMA's corporate services, and greater elaboration on how it is allocated to the PSO.

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Consultancy

Mr. Brendan Wauters noted that there is a 50% increase in consultancy, and he enquired what consultancy projects were being considered.

Mr. Yeo replied that the additional budget is for consultancy services for development of long-term technical concept plan planned for 2010/11. In reply to the Chairman's query on what those projects are, he commented that when projects are due for implementation, these will be published on the website. Mr. Yeo also added that although the percentage might be perceived as high, the budget is not significant; \$600k compared to \$400k in the previous

Budget and Fee Overview

Mr. Ng Meng Poh commented that EMA's projections of electricity trade in 2009 and 2010 were done in July 2009. With the recent economic rebound, he enquired if more updated projections showing an increase in electricity sale are available.

Mr. Philip Tan noted that customers have queried on the variance between the PSO fee reflected in their monthly bills, and the budgeted number posted on EMC's website. As such, the Panel requested that the actual monthly PSO fees be posted on EMC's website alongside the budgeted figure.

He also requested for both the PSO and EMC to use a consistent set of electricity trade projections to be established to accompany the budget for 2010, when coming out with their respective costs on a MWh basis and provide a common set of definitions on how the projections are determined.

Maintenance

Mr. Lawrence Lee recalled that at the FY09/10 PSO budget review last year, it was mentioned that the maintenance cost increase for IT services should smooth off in subsequent years. However, the budgeted maintenance costs for FY10/11 continued to increase significantly. He asked if the PSO could share with the RCP when this cost item will be stabilised or decreased.

Mr. Yeo replied that the cost for provision of IT Services due to implementation of SOEasy (a Government initiative) should smooth off over time.

Mr. Dallan Kay commented that the RCP had made earlier requests for the PSO to separate the costs associated with monitoring and planning the piped natural gas system from other electricity system costs. The EMA/PSO responded that this monitoring and planning function is required to ensure the secure operations of the power system.

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With the development of the gas market, Mr. Kay asked to seek EMA/PSO's reconsideration to allocate some of these costs to the gas market.

The Panel further maintained its stand that it is unable to meaningfully assess the PSO's budget given the limited information provided. In summary, the RCP requested the PSO to provide greater transparency by responding to the following clarifications:

PSO

- **Maintenance** – At the FY09/10 PSO budget review, it was mentioned that the maintenance cost increase then should smooth off in subsequent years. However, the budgeted maintenance costs for FY10/11 continued to increase significantly. Could PSO share with the RCP when they expect this cost item to stabilise or come down?
- **Consultancy** – Given the \$200k (or 50%) increase in consultancy expenses, it would be useful for the PSO to share in greater detail the planned consultancy studies in the next FY.
- **Corporate Services** –The RCP noted the proposed budget of \$4.945 million for this expense item, which constitute corporate services provided by EMA HQ. The RCP would like to seek clarity on the total costs of EMA's corporate services, and greater elaboration on how it is allocated to the PSO.
- Some customers have queried on the variance between the PSO fee reflected in their monthly bills, and the budgeted number posted in EMC's website, the RCP requested that the actual monthly PSO fees be posted on EMC's website alongside the budgeted figure, to assuage their confusion.
- With the development of the gas market, the Panel sought EMA/PSO's reconsideration to allocate the costs associated with monitoring and planning the piped natural gas system from other electricity system costs to the gas market, in line with the causer-pay principle that is widely adopted in the electricity market

EMC advised that it would circulate the submission on the points discussed above to Panel members for confirmation prior to sending to the EMA.

EMC

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8.0 EMC Proposed Expenditure and Schedule of Fees for Fiscal Year 1 April 2010 to 31 March 2011 (Paper No. EMC/RCP/47/2010/07)

Mr. Dave Carlson, Chairman of RCP informed the Panel that he and Mr. Kenneth Lim of EMC declared a conflict of interest in the discussion on EMC's Budget and Proposed Fees and would not take part directly in the discussion except to answer any questions directed at them.

Mr. Yeo Lai Hin also informed the Panel that he declared a conflict of interest in the discussion on EMC's Budget and Proposed Fees and would not take part directly in the discussion.

The Panel invited Ms. Coco Choo, Chief Financial Officer and Ms. Joan Koh, Vice President (Finance) of EMC to the meeting.

Ms. Coco Choo presented the Budget and Proposed Fees for FY2010/2011.

The Panel was informed that under the Market Rules and EMC's Market Licence, EMC is obliged to consult the Rules Change Panel on its Proposed Budget and Fees for the financial year 1 April 2010 to 31 March 2011, prior to submitting to the EMC Board for consideration and subsequently to the EMA for approval.

8.1 Revenue

The Panel was informed that EMC's revenue is set by the EMA in accordance to approved revenue regulatory regime of a 5 year period from FY2008/09 to FY2012/13.

The Panel was also informed that yearly adjustments will be made to EMC's revenue cap for:

- Exogenous items
- Depreciation

In reply to Mr. Chan Hung Kwan's query, Ms. Choo informed that the Company's return is based on WACC return of 9.15% on Assets less Cash.

The Panel was informed that the key budget parameters are:

- i. FY2010/11 is the 3rd year of the 5-year regulatory regime period
- ii. Revenues are largely fixed by the EMA
- iii. Expenses contained within EMA regulated amounts
- iv. Budgeted expenses are supported by specific functions, initiatives and projects
- v. Industry consultations are sought and used as input to setting company priorities
- vi. Over the long term, \$/MWh cost of operating the market falls

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8.2 The table below summarised EMC's Budget for FY2010/11:

	FY 10/11	FY 09/10	FY 09/10	FY 10/11
	Budget	Reforecast	Budget	EMA Regulated Sums *
	\$'000	\$'000	\$'000	\$'000
<u><i>NEMS Revenue</i></u>				
Admin Fees	28,833	28,641	28,641	28,833
Revenue adjustment/PIMS bonus	239	(133)	393	440
Total NEMS Revenue	29,072	28,508	29,034	29,273
<u><i>NEMS Operating Expenses:-</i></u>				
Manpower	8,054	7,505	7,950	8,562
Other operating expenses	17,813	16,323	17,151	18,664
Total NEMS Operating Expenses	25,866	23,828	25,101	27,226
NEMS Operating Profit (before interest and tax)	3,206	4,680	3,933	2,048

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8.3 Market fees used to fund EMC's NEMS services.

Year	NEMS volumes GWh	EMC Admin Fee (\$000s)	Cents/MWH
2003 (actual) ¹	32,578	25,710	39.5
2004 (actual) ¹	34,218	28,466	41.6
2005 (actual) ¹	35,628	27,637	38.8
2006 (actual) ¹	36,724	27,945	38.0
2007 (actual) ¹	38,311	27,749	36.2
2008 (actual) ¹	38,839	27,662	35.6
2009 (reforecast) ²	38,758	28,508	36.8
2010 (budget) ³	39,727	29,072	36.6
2011 (projection) ³	40,721	28,960	35.6
2012 (projection) ³	41,739	28,868	34.6
2013 (projection) ³	42,782	28,518	33.3
2014 (projection) ³	43,852	28,707	32.7

1. The actual volume is based on metered quantities from MSSL.
2. The reforecast for 2009 is based on actual volumes in 2009 being annualised.
3. The projections from 2010 to 2014 are based on 2.5% increase year on year.

Ms. Choo noted that Mr. Philip Tan had requested that EMC publish the actual monthly EMC and PSO service fees per MWh being charged each month.

In reply to Mr. Kay's query on the demand forecast, Ms. Choo informed that the projection rate of 2.5% per annum was based on EMA's commentary in Statement of Opportunity released in November 2009.

Mr. Ng Meng Poh commented that the budget volume for FY2010 is different from PSO's budget and there is a need for consistency.

Mr. Kay agreed with Mr. Ng's comments and made a suggestion to EMC to specify that the budget volume is prepared on a net basis and to indicate whether it is for the financial or the calendar year.

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8.4 Detailed Expenses

On the Capex, Mr. Tan asked if EMC has taken into account the proposed EMA directed projects. Mr. Poh informed him that under EMC's revenue regime, EMC's budget is based on projects that were previously agreed and all EMA directed projects are considered as exogenous items. When clarity is received on the project requirements, EMA will approve any additional costs.

8.5 Internal/NEMS infrastructure and software application.

Under Item 4.2, Mr. Lawrence Lee noted that one of the projects planned was to automate the uploading into the market clearing engine of any load shed files sent by the PSO in the event of a forecast load shed event. Mr. Kenneth Lim informed him that EMC is still in discussion with the PSO on whether the costs would outweigh the benefits of the load shed automation. Given that since market commencement no such event had been forecasted, the Panel requested that EMC provide further business case justification to the Panel prior to proceeding with this project.

RCP Comments

The Panel made the following comments:

1. The Panel noted that actual NEMS sales volumes frequently deviated from those projected by EMC and that this had the potential to create confusion with consumers when trying to reconcile their monthly electricity statements in respect of the \$/MWh EMC and PSO service fees charged. The Panel requested that EMC publish the actual monthly NEMS sales volumes and actual monthly EMC and PSO service fees per MWh being charged each month.
2. The Panel noted that the NEMS sales volumes projections used by EMC were not consistent with those used by the PSO. The Panel requested that EMC and PSO be consistent in their projected sales volumes and that the basis used for their calculations be given.
3. The Panel noted that one of the EMC projects planned for FY2010/11 was to automate the uploading into the Market Clearing Engine of any load shed files sent by the PSO in the event of a forecast load shed event. Given that since market commencement no such event had been forecasted, the RCP requested that EMC provide further business case justification to the Panel prior to proceeding with this project.

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4. The Panel noted the use of the acronym “BIMS” without any further explanation of what this stood for being given in the planned project “BIMS Enhancement”. While noting the explanation given during the meeting that “BIMS” stood for Business Intelligence Management System, the Panel requested that EMC refrain from the usage of non industry accepted acronyms without first explaining their meaning.

EMC stated that it would circulate the RCP Report on EMC’s Budget and Proposed Fees for FY2010/11 to the Panel for confirmation before issuing to the EMC Board and the EMA.

EMC

The Panel thanked Ms. Choo and Ms. Joan Koh for their attendance.

- 9.0 Mr. Brendan Wauters took the opportunity to inform the Panel that he has submitted his resignation as a member of the Rules Change Panel. He thanked the Panel for allowing him the opportunity to sit on the Panel and also said that he was impressed with the quality of the rules change discussions and the Panel members. Mr. Wauters then sought permission to leave the meeting.

The Panel thanked Mr. Wauters for his contributions to the rules change process and wished him success in his new appointment as CEO of Senoko Power.

10.0 Matters Arising – Item 1.0 Distribution of Reserve/Regulation Payments

Mr. Tan Liang Ching informed the Panel that the total payment to non-providers of reserve and regulation was \$575,008, for the 12 months from Dec 08 to Nov 09. This figure is nearing the earlier threshold of \$600,000 set by the RCP back in 2004.

He mentioned that there are 2 possible options to avoid reserve/regulation payments to non-providers, either:

- Option A) Automated Pre-settlement Reserve/Regulation Filter, or
- Option B) Manual Post-Settlement Adjustment

In response to Mr. Kay’s query on how partial non-compliance (e.g. if a unit scheduled to provide reserve trips halfway into the period) is treated, Mr. Tan responded that the RCP had earlier decided to treat it no different from total non-compliance, since partial non-compliance would similarly compromise system security. Mr. Yeo also added that if the unit trip, it usually does not come back immediately. Hence if the offers have not changed, non-compliance would follow in the subsequent period(s). In all cases of non-compliance, the PSO will send non-compliance reports to EMC and MSCP, and the MSCP will then follow up where necessary.

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The Chairman informed that in 2004, the RCP made a decision that the total amount involved back then was immaterial and did not justify the system costs to implement a claw-back option. The Panel thus set a trigger of \$600,000, based on 1% of the total reserve/regulation market. The RCP will continue to monitor and if the amount exceeds the threshold of \$600,000, then the RCP will consider what actions to take.

Mr. Lawrence Lee suggested that the trigger level should be set as a percentage of the total reserve and regulation market so as to keep pace with growth changes within the market.

The Panel agreed to use 1% of total reserve and regulation payments as the threshold.

The Panel requested EMC to study *Option A - Automated Pre-settlement Reserve/Regulation Filter* further and revert to the Panel with the estimated cost and implementation schedules for the system changes required for both EMC and PSO.

EMC

11.0 Publication of Historical Dispatch Schedules
(Paper No. EMC/RCP/47/2009/291)

The rule change proposal was to publish the historical dispatch schedule of all generating units by period with unit ID.

Mr Henry Wee presented the paper and informed that as a result of implementing the proposed rule change, EMC will require system changes to publish the identities of the registered facilities scheduled in each dispatch period. This is done together with respective scheduled quantities for Energy, Reserve by Reserve class and regulation for the previous dispatch day.

The Panel was informed that the implementation cost of publishing the real-time dispatch is \$17,000 and upon implementation of the single electronic website further enhancement will be done to automate the publishing process and this will cost another \$50,160.

Mr. Poh informed that the decision of the RCP taken at the 46th RCP Meeting was based on the following:

- Data should be made available to all instead of some, to level the playing field
- To facilitate public monitoring calls

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Mr Poh added that the rules were drafted for historical dispatch schedule to be published on EMC website such that it is freely available to all, based on the panel's reasons above, including reasons for increased market transparency for the public and new investors.

While Mr Kay supported the release of historical dispatch schedules to all, Mr. Ng recommended full disclosure of the publication to market participants and limited availability to be provided to the public and new entrants coming into the market.

Mr Langdale said he did not recall the Panel previously raising any concern on releasing this information to the public.

The Panel requested EMC to modify the rule change as follows:

- a. make available to Market Participants and Market Support Services Licensee; and
- b. make available to public only upon request

EMC will provide the required rule change modification to the Panel by circulation and the modified rule change will be submitted to EMC Board for endorsement.

Mr. Kay requested for a sample format of the publication to enable market participants to prepare in terms of system, duration and design prior to implementation of the publication.

EMC

The Panel:

- supported the rule modification proposal to make available the historical dispatch schedule by generating unit;
- supported the rule modification proposal to correct the inconsistency in the usage of 'Real-time Dispatch Schedule';
- recommend the EMC Board adopt the rule modification proposal to insert the new Section 10.3A in Chapter 6;
- recommend the EMC Board adopt the consequential rule modification proposal to modify the following:
 - Section 9.7.2 of Chapter 5; and
 - Section 9.2.1.1 and 9.2.3 of Chapter 6; and
 - Appendix 6A.2; and
 - Section 1.1.203 of Chapter 8;

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12.0 Shortlist of Data Types considered for release in SWEM

(Paper No. EMC/RCP/47/2010/CP19)

Mr. Henry Wee presented the paper and informed the Panel that, at the 44th RCP meeting, the Rules Change Panel (RCP) approved the shortlist of data types to be reviewed for release in the Singapore Wholesale Electricity Market (SWEM) and the methodology for assessing if such data should be released. The shortlist was selected from 5 categories of data types presented in the 2007 CRA survey of data release practices in centrally-dispatched electricity markets.

EMC sought the EMA's view to assess if releasing such information will have an adverse impact on national security. The EMA replied that information relating to load flow model should not be released to any party as it is critical to system security.

Given EMA's decision that the load flow model should not be released, EMC focused on reviewing whether data on unit specific operational parameters should be released and no specific benefit was identified. No interested parties identified any specific benefits that will be derived from making the data available. In terms of costs, an implementation cost will be incurred and a concern was also raised over the commercial sensitivity of such data.

From the cost-benefit analysis, EMC recommended that the Panel do not support the release of data on unit specific operational parameters.

The Panel supported EMC's recommendation not to release information on 'Unit Specific Operational Parameters' in SWEM.

13.0 Allocation Reserve Costs to Load and Generation Settlement Facilities (Paper No. EMC/RCP/47/2010/CP23)

Ms. Nerine Teo presented the paper and informed that currently, both Generation Registered Facilities (GRFs) and GSFs pay regulation charges up to a maximum of 5MWh each (based on IEQ), with consumers bearing the remaining regulation charges in the market. In contrast, reserve costs are charged totally to GRFs, apportioned based on their respective scheduled energy quantities above 10MW.

The Panel was informed that there is a need to re-visit the underlying principles behind existing reserve cost allocation on the following:

- a. Should loads pay 5% of total reserve costs?

SWEM operates on the principles that i) the costs of services should be charged to those who caused the need for these services, and ii) risk will be allocated to the party best able to manage it.

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Under both counts, it is intuitive for Generators to pay for reserve costs, since they cause the need for reserve (e.g. when they trip), and they can best manage the reserve cost risks in the system. Conversely, since load does not fulfil either of conditions, they should not be charged reserve costs.

An examination of other jurisdictions suggests that they employ different allocation methodologies depending on the underlying principles that drive their markets. However, a literature review supports charging reserve to generators. Since SWEM is built upon the causer-pay principle, it should therefore be used as the starting point to review the reserve allocation methodology.

In conclusion, there is no justification to allocate reserve costs to load in SWEM.

- b. Should reserve charges be extended to a generation facility¹ with scheduled energy less than or equals to 10 MW (herewith termed, GF_{≤10MW})

Reserve is procured to cover any large unexpected generation loss in the system, while regulation is employed to address minor system fluctuations. Based on PA Consulting's memorandum, EMA's guide to the NEMS and PSO's inputs, an outage by a GF_{≤10MW} (i.e. any generation loss less than or equal to 10MW), will not require reserve activation, as it will already be adequately covered by regulation. PSO has also confirmed that this is the case. Applying the same causer-pay principle, GFs_{≤10MW} should not pay for reserve charges.

Ms. Teo informed that arising from the above discussion, the existing reserve cost allocation methodology should be retained.

Mr. Kay asked whether units within a size of 10MW or less do not cause an issue or will cause an issue to a lesser extent than the larger counterparts in the system.

Mr. Yeo replied that the PSO observe that GF with a size less than 10MW does not trigger the need for reserve unless a single element/functional system failure would cause more than one GF to trip.

The Chairman asked if more regulation volume will be procured if there were more units less than 10MW. Mr. Yeo replied that regulation requirement is based on system demand rather than number of GF_{≤10MW}.

¹ Although the proposal specifically stated GSFs, the market rules now requires that generation facilities at a generating station which has aggregate nameplate rating of more than 10 MW to be registered as one or more GRFs. As such, it is possible for a GRF to have a nameplate rating of less than 10 MW.

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Mr. Sim Meng Khuan asked EMC to re-look at reconciling the title and recommendations of the concept paper.

In conclusion, the Panel recommended to retain existing reserve cost.

14.0 Modeling of Multi-unit Contingency Risk
(Paper No. EMC/RCP/47/2010/CP17)

Ms. Wang Jing presented the paper and informed that the current reserve regime shows:

- MCE schedule sufficient reserve to cover the largest risk of any **single** Generation Registered Facility (GRF)
Risk of any GRF = Scheduled Energy of the GRF
– Power System Response
+ Scheduled Effective Reserve of the GRF
+ (Risk of all SCU)
- Reserve Cost allocated to individual GRFs

The Panel was informed that the PSO raised concerns about insufficient reserve being procured against some types of contingency events that could cause the power system to lose multiple generation facilities at the same time. The three Multi-unit Contingency Risks identified by the PSO are:

Type 1: Two or more GRFs are co-dependent

During normal operation, if there is tripping of more than one GRF due to single element/functional system failure, the PSO will consider these GRFs to be co-dependent, i.e. they could trip simultaneously/consecutively.

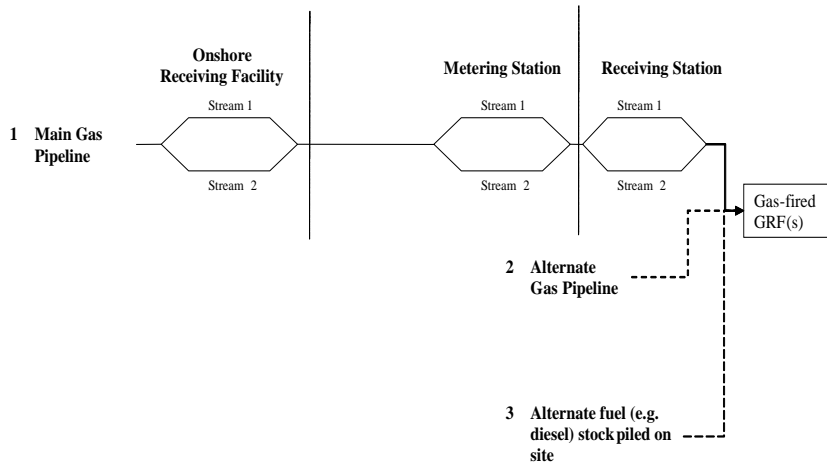
Type 2: Multiple GRFs connected through one single Transmission Facility

Two or more GRFs within the same power station are connected to the grid through one remaining transmission facility. If this transmission facility trips, the system will lose all the GRFs connected through this transmission facility

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Type 3: Gas Disruption Risk which may lead to disruption of gas supply to more than one GRF



When the GRF has only one gas pipeline (or has two pipelines but one is not available) and the diesel system or hot-switching capability of the GRF is on maintenance/not available.

When the GRF has only one gas pipeline (or has two pipelines but one is not available) and the gas metering facility at the power station is on single stream operation.

When the GRF has only one gas pipeline (or has two pipelines but one is not available) and the receiving facility at the power station is on single stream operation.

Mr. Ng Meng Poh commented that under the Type 3 MUC risk the alternate gas pipe-line is not a feasible pipeline because if the main gas pipe-line breaks down, the alternative will only provide a small proportion of the total gas supply. He also commented that a holistic study of the gas and electricity system was being conducted by EMA's consultant.

Mr. Yeo agreed that the alternative source is unable to provide full gas supply continuously but is able to provide time to enable a safe shut down or switchover to diesel fuel.

Ms. Wang Jing went on to further explain that: In any of these three scenarios, the system could lose more than one GRF during a single contingency event (Multi-Unit Contingency Event). Reserve requirement is set to cover loss of one (largest) GRF only and insufficient reserve could lead to load shedding or widespread blackout.

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Mr. Langdale asked if it is the RCP's role to determine how much reserve is required in relation to the available generators. He thought that the reserve should be set by the EMA and not the RCP. He thought that the amount of reserve required should be set by the EMA as the decision on what percentage of electricity supply we should procure reserve for, to ensure there is sufficient system security, needs to be made at that higher level.

Mr. Yeo clarified that implementing the MUC does not ultimately increase the reserve requirements. It will enable the MCE to recognise the MUC units and dispatch sufficient reserve to cover the risk of these particular MUC units should it be scheduled. If the MUC units are not scheduled, the reserve requirement remains to be the largest unit in the system. MCE may schedule the MUC units at lower output level matching the available reserve in the system.

In this way, the MCE will optimise the dispatch schedule and decide whether to dispatch these 2 units considering their MUC risk or use another alternative unit to replace them.

The Chairman informed the Panel that the RCP is the right body to consider the rule change modification and to consider the cost implications.

Mr. Yeo also informed that should RCP decides not to implement MUC proposal, the PSO may be forced to apply a multiplying factor called the Risk Adjustment Factor ("RAF") to the reserve requirement when conditions similar to those highlighted in the MUC paper exist. Bulk of the higher reserve cost will be shared amongst all the generators, which means that each generator will then have to pay more even though they did not cause it. As shown in the CBA, use of RAF could result in much higher market prices (higher cost) to the NEMS than the use of MUC.

Mr. Chan asked if there is an issue if the PSO continue to use the multiplying factor. Mr. Yeo explained that the cost will be allocated to all gencos rather than to a particular genco that is the causer. He added that if the more superior (dynamic and targeted) MUC proposal is not implemented, then the less effective (static and global) RAF might have to be used as a means of acquiring more reserve in the system instead of allowing the MCE to dynamically matching the output of MUC units to reserve.

Mr. Chan felt that it is a cost allocation issue rather than a security issue and how often do we trigger this. If this is triggered once a year he asked if it is necessary to look into all these complicated mechanisms with additional costs. He felt that the consumers will then have to bear the costs.

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Mr. Yeo informed that the other issue is on Type 2 MUC whereby transmission licensee are involved. Then the reserve costs have to be allocated to the gencos and the transmission licensee.

Mr. Chan reiterated that the transmission licensee has written a letter to EMC (and copied to EMA) highlighting that the transmission licensee is operated under the regulated market regime that is different from the competitive wholesale electricity market and disagreed with the proposed allocation of reserve costs to the transmission licensee.

Mr. Kay asked how the proposal addresses the risks associated with the LNG terminal and said that if the MUC proposal is implemented, it should be comprehensive and address all MUC risks. Mr. Yeo informed that the LNG terminal is still under planning and construction stage. PSO would in-time assess whether it should be included as an MUC risk to the system”.

Ms. Wang Jing then presented the proposed CBA methodology and the results of the CBA study.

Mr Langdale commented that there seems to be no scientific approach to assess costs of a blackout or load shed and what you are expect during a blackout when you have the existing system and when you have changed to what is being proposed.

Mr Poh responded that when the expected benefit of blackout are assessed based on 3 factors 1) the reduction in quantity of load shed - when the reserve requirement is increased, there will be less load shed; 2) the probability of blackout 3) the value place on not shedding load

Mr Yeo commented that the way the Expected Energy Not Served (EENS) was derived in the paper underestimated the benefits. As stated in the SOM, the load shed will occur in blocks (1st stage would be at least 5 % of total load). It cannot be 1.5MW or 0.54MW as calculated in the paper’s CBA. Furthermore he added that the CBA did not take into account the intangible benefits such as Singapore’s reputation, investors’ confidence, etc. Based on historical records, these contingencies and load shedding did happen a few times over the last few years.

Mr Langdale referred to the CBA results in the paper and commented that the reliability of the system should be strengthened without making it too expensive. It is important not to cover these risks by procuring more reserve from the market but to ensure that other mitigation measures (e.g. diversify the supply) are in place.

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In reply to the Chairman's query on whether the Panel is agreeable with the alternatives that have been presented, Mr. Chan disagreed with the proposed cost allocation to the transmission licensee. He also questioned whether the RCP is the right body to recommend reserve cost allocation from the wholesale market to the regulated transmission licensee and whether this would be in conflict with the regulatory and current market design framework.

Mr. Poh replied that the cost allocation is based on the market design principle and the causer based principle. He also said that all rule changes will be submitted to the EMA for approval.

Mr Kay commented that EMC should also look at the intangible benefits such as Singapore global reputation and investor's confidence. To this, Mr Poh responded that it is not possible for EMC to estimate such intangible benefits.

Mr Ng commented that if any consumer (e.g. semiconductor manufacturers) requires higher reliability, some local solutions can be found for these consumers. It does not have to increase the reserve requirement at the system wide level to address such needs. Mr Ng suggested to remain status quo with current arrangement and see what's the outcome of EMA's holistic study.

The Panel agreed that the market rule should remain status quo and to defer the work of the concept paper until the completion of the holistic study of the gas and electricity system commissioned by the EMA.

The Chairman said that EMC ought to inform the consultants doing the holistic study on the proposed rule change modification so that they can take this into account.

The Panel noted that the PSO will continue to use the RAF as required to activate more reserve when the needs arise.

There being no other matters, the meeting ended at 1.35pm.

Dave E Carlson
Chairman

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