MINUTES OF THE RULES CHANGE PANEL
60th MEETING
HELD ON TUESDAY, 13 MARCH 2012 AT 9.35AM
AT ENERGY MARKET CO. PTE LTD
238A THOMSON ROAD #11-01
NOVENA SQUARE, SINGAPORE 307684

Present: Dave Carlson  Toh Seong Wah
          Chan Hung Kwan  Michael Wong
          Luke Peacocke  Dr. Toh Mun Heng
          Dallon Kay  Lawrence Lee
          Phillip Tan  Pak-Juan Koe
          Kng Meng Hwee  Daniel Lee

Absent with apologies: Sean Chan
                      Loh Chin Seng

In Attendance: Paul Poh
               Tan Liang Ching
               (EMC)
               Wang Jing
               Nerine Teo
               Lucia Loh

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 59th Rules Change Panel Meeting
The Minutes of the 59th Rules Change Panel meeting held on 9 January 2012 were tabled.
As there are no amendments to the Minutes, the Rules Change Panel approved the Minutes.

2.1 Matters Arising
The Panel noted, as outlined, the follow-up actions for the matters arising have all been completed.

3.0 Summary of Outstanding Rule Changes
The Panel was informed that there are 2 outstanding issues in the rules change proposals.
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<th>Action</th>
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### 4.0 Monitoring List

The Panel noted the contents of the Monitoring List.

### 5.0 Rules Change Workplan Status Update

Mr. Paul Poh informed that the current Rules Change Work Plan was agreed by the Panel in March 2011. EMC has embarked on the 2012/13 Rule Change Work Plan prioritization exercise, and the proposed work plan issues for 2012/13 will be presented to the Panel for decision (refer to Paper No. EMC/RCP/60/2012/09).

### 6.0 Apply Cap on Reserve and Regulation Charges imposed on Embedded Generators (Paper Concept No. 36)

The Panel was informed that the concept paper was discussed at the 59th RCP Meeting in January 2012. At the 59th RCP meeting, the Panel raised 2 issues for clarification.

#### 6.1

The Panel requested EMC to ask the EMA if any assessment was conducted to conclude that the EG (when integrated with its associated load) poses less risk to the system compared with a commercial generator.

The EMA responded that there was no specific study conducted on the aforementioned topic. The decision was made based on the design principle of “gross pool market” where all generators and load that are connected to the grid are considered to have an impact on the system and should pay for reserve and regulation costs on a gross basis. Thus regardless of whether EG output is for own use or for export to the grid, it imposes the same burden on the system in terms of reserve and regulation requirement.

#### 6.2

EMC was also requested to seek clarification from the PSO specifically whether a bigger generator is more volatile in output and thus requires more regulation.
The PSO responded that while a larger generator could have larger variation in output, which could be due to combination of system frequency change, AGC command or internal control system of the generators. As the contributing factors could not be singled out in practice, hence it would not be correct to assume that a larger generator...

The Panel was also informed that in another RCP paper "CP23: Allocation Of Reserve Costs To Load (5% Share) and Generation Settlement Facilities (GSFs)", the RCP decided that reserve cost should not be charged to generators smaller than 10 MW (equivalent to 5 MWh in a half hour) as any tripping of such generators would be covered by regulation (as confirmed by PSO). This implied that tripping of generators greater than 10 MW will require reserve and thus such generators are charged reserve cost.

Thus it remains to charge large generators up to a cap of 10 MW for regulation, and any scheduled energy above the 10MW threshold to be charged reserve costs.

6.3 The Panel was informed that EMC’s recommendation was that there was no justification to apply a cap on reserve and regulation charges paid by EGs.

6.4 The following members voted to support EMC’s recommendation that there was no justification to apply a cap on reserve and regulation charges paid by EGs:
Toh Seong Wah (Employee of EMC)
Kng Meng Hwee (Representative of the PSO)
Chan Hung Kwan (Representative of the Transmission Licensee class of market participant)
Luke Peacocke (Representative of the Generation Licensee class of market participant)
Daniel Lee (Representative of the Generation Licensee class of market participant)
Michael Wong (Representative of the Retail Electricity Licensee class of market participant)
Dallon Kay (Representative of the wholesaler electricity market trader class of market participant)
Lawrence Lee (Representative of the Market Support Services Licensees)
Dr. Toh Mun Heng (Representative of consumers of electricity in Singapore)
Phillip Tan (Person experienced in financial matters in Singapore)

The following member did not support EMC’s recommendation:
Mr. Pak-Juan Koe (Representative of Generation Licensee Class)

Thus, the Panel by majority vote supported the recommendation not to apply a cap on reserve and regulation charges paid by EGs.
7.0 Allocation of Regulation Costs  
(Paper Concept No. 37)

Mr. Tan Liang Ching presented the concept paper to address the proposal to allocate a greater proportion of regulation costs to loads that are more “variable” as compared to “flat” loads. The proposer suggested that this is in line with causer-pay principle given that “variable” loads cause the need for more regulation.

7.1 Mr. Michael Wong raised the following points:

1. The principle of “causer pays” appeared contradictory with the earlier rule change of capping regulation price offers. He opined that the party responsible for the need for more regulation should pay more, but capping regulation offers and consequently regulation prices has a distortory effect.

2. As Singapore is a much smaller market than AEMO, more studies are needed to determine if the latter's model is adaptable to Singapore’s context. He commented that since the NEMS market has been working well, there may not be a need to change the cost allocation especially with the complexity and resources associated with the change. He said that efforts would be better spent addressing other issues in the market.

7.2 Dr. Toh asked if there are industrial standards relating to volatility and if there are is it possible to peg NEMS to that and to leave it to the market to handle. The Chairman said that Singapore has a reliable system and this does come at regulation cost. However from an international viewpoint the quantity of MW procured would not appear to be out of the norm.

7.3 Mr. Kng informed that the regulation requirement is about 1% of the overall system demand. It is not excessive considering that Singapore’s power system of 6,500 MW is much smaller than Australia of more than 30,000 MW, such that any fluctuation in load will have a bigger impact on our system.

7.3.1 Mr. Kng noted a comment on AGC, whereby the PSO’s command to generating units would supposedly move generators’ output to counter the frequency variation. He commented that the generators’ internal governance system would act faster than the AGC command. Further, AGC signals try to correct the system frequency over a longer timeframe (e.g. one minute), rather than within seconds and thus, 4 seconds measurement to gauge response to AGC command may not be appropriate. There would therefore be complications in determining exactly who is contributing positively or negatively to system frequency deviations.
The Chairman added that one of the principles discussed was whether the rule change will create incentives such as to reduce the procurement of regulation. If not, then the only market principle that the proposal achieves was that of equitable distribution. It means that more volatile loads will pay more while more stable loads will pay less, such that there is a readjustment in cost allocation. Non-contestable consumers may be grouped, by default, with unstable loads.

Mr. Koe noted that the cost to implement the changes would be in the order of millions, and enquired if it is possible to bundle other issues together as part of a holistic study so as to amortize the costs.

Mr. Kng commented that it is not just the issue of implementation costs, but also the issue of who is best able to manage the potential change (increase) in allocated Regulation charge. He added that smaller consumers may not be able to manage these risks, unlike larger consumers who can manage purchase and operation of equipment to minimise their internal load fluctuations. The proposal may thus shift the costs to the smaller consumers. It is not just the fairness of whether the causer should be paying, but whether the affected parties are the ones best able to manage the load variations.

The Panel members unanimously voted to support that EMC should not proceed to the next phase of the concept paper:

Review of the Value of Lost Load (VoLL) (Concept Paper 38)

Ms. Lucia Loh presented the proposal to increase the Value of Lost Load (VoLL) from the current level of $5,000/MWh to $10,000/MWh. Given that price ceilings and constraint violation penalties in the Singapore Wholesale Electricity Market are pegged to VoLL, raising the figure would have a corresponding effect on their nominal values.

Ms. Loh informed that based on the current approach of estimating VoLL using the economic estimate, by taking Gross Domestic Product divided by energy consumed, there is justification to increase VoLL to a level of around $6,500/MWh, but not the proposed $10,000/MWh.

However, when considering the proposal holistically, a higher VoLL does not appear warranted at present for the following reasons:

- Raising VoLL to the economic estimate level is not meant to, and was found inadequate in, incentivising peaking plant investment;
- No compelling need to incentivize investment in base load generation plants currently;
- A higher VoLL could raise the level of risk in the market and consequently increase risk premiums charged on retail and/or bilateral contracts;
The market is expected to remain fairly concentrated in the foreseeable future. Coupled with weak demand responsiveness, a higher VoLL could render consumers vulnerable to more extreme price spikes in the spot market.

Therefore, EMC recommends to hold the proposal to raise VoLL in abeyance until such time when there is (1) a lower level of market concentration which can be signalled by the EMA’s removal of vesting contracts imposed for market power control, (2) more demand response initiatives, and/or (3) better risk management mechanisms that could mitigate the effects of a higher VoLL.

Mr. Peacocke noted that EMC’s analysis used a backward looking assessment of whether existing peaking plants have been able to cover their costs. He opined that it is more important to be forward looking and to ensure that the market design contains adequate incentives to retain, and if necessary build, peaking capacity for the future, so that Singapore’s total generation supply mix is optimal.

The following Panel members voted not to support the proposal to increase VoLL:
- Mr. Toh Seong Wah (Employee of EMC)
- Mr. Pak-Juan Koe (Representative of Generation Licensee class)
- Mr. Michael Wong (Representative of Retail Electricity Licensee class)
- Mr. Daniel Lee (Representative of Generation Licensee class)
- Mr. Lawrence Lee (Representative of Market Support Services Licensee)
- Dr. Toh Mun Heng (Representative of Consumers)
- Mr. Phillip Tan (Person experienced in Financial Matters)
- Mr. Kng Meng Hwee (Representative of PSO)

The following members voted to support the proposal to increase VoLL:
- Mr. Luke Peacocke (Representative of Generation Licensee)
- Mr. Dallon Kay (Representative of Wholesale Electricity Market Trader class)

The following member abstained:
- Mr. Chan Hung Kwan (Representative of Transmission Licensee)

Thus, the Panel by majority vote did not support the proposal to increase VoLL.

8.1 In view of the above considerations, Mr. Kay requested for the Panel to monitor the Herfindahl-Hirschman Index based on generators in the market and include this item on the monitoring list. This was agreed by all Panel members.

Approved at the 61st RCP Meeting
held on 15 May 2012
9.0 Rules Change Panel Work Plan 2012/13
(Paper No. EMC/RCP/60/2012/09)

Ms. Lucia Loh first presented a consolidation of the achievements of the RCP against the agreed Rules Change Work Plan for 2011/12.

Out of the 13 issues prioritised in the “within 12 months” category, the RCP has completed work on 10 of them and significant progress has been made on 2 issues:
- Demand Side Bidding in the Energy Market
- Introduction of Tie Breaking.

In addition to the agreed work plan, the Panel also addressed other issues over the financial year, including:
- Review of Dispute Resolution Procedures
- Review of Exemption to Allow Temasek Holdings Affiliates to be Concurrently Represented on the RCP
- Recovery and Refund of Reserve and Regulation Payments.

Further, the Panel was informed that the Energy Market Authority (EMA) also directed EMC to undertake the following rule changes in the past year:
- Clarification of the Definition of Electricity Act in the Market Rules
- Review of Policy on Direct Supply of Electricity by Generating Sets to Onsite Load.

Ms. Loh then presented the Panel with the list of 23 issues for this year’s prioritisation, including 16 which were newly brought up by stakeholders for inclusion in the updated work plan. Stakeholders’ rankings of the issues on the proposed work plan, and preference for any issue to be removed from the list, were tabulated.

Mr. Koe commented that there is a need to track repeated rules change requests. He suggested the removal of proposed changes which repeatedly (over a number of years) do not get prioritized into the RCP Workplan, and that EMC advise proposers of the removal while not discouraging them from future re-submission.

Mr. Koe added that there is a need to inform EMA/PSO about issues which have been brought to the RCP but which should rightfully be handled by EMA/PSO rather than by the Rules Change Panel. Mr. Kay asked if coordination with EMA/PSO can be enhanced.

The Panel then discussed the 23 issues on the proposed work plan and made the following decisions:
<table>
<thead>
<tr>
<th>No.</th>
<th>Issue Title</th>
<th>Panel’s Decision to agree to place or remove from the work plan</th>
<th>Priority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Introduction of Tie Breaking</td>
<td>Agree</td>
<td>Within 12 months</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Demand Side Bidding in the Energy Market</td>
<td>Agree</td>
<td>Within 12 months</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Updates to the Market Manual (for Chapter 6 of Market Rules)</td>
<td>Agree</td>
<td>Within 12 months</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Differentiation in probability of failure computation for multi-shaft plants and single-shaft plants</td>
<td>Agree</td>
<td>Within 12 months</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Issuing abnormal condition advisory for security constraints</td>
<td>Remove</td>
<td></td>
<td>Given that the proposer and EMC’s representative were agreeable to handle the issue offline, the Panel agreed to remove this item.</td>
</tr>
<tr>
<td>11</td>
<td>Provision for price revision when generating units fail to revise their offers in good faith</td>
<td>Agree</td>
<td>Within 12 months</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Adjustment of recovery and refund of reserve payments for partial provision of reserve</td>
<td>Agree</td>
<td>Within 12 months</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Review of constraint violation penalties (CVPs) and price bounds</td>
<td>Agree</td>
<td>Within 12 months</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Review of exceptions to gate closure rule</td>
<td>Agree</td>
<td>Within 12 months</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Typo in Chapter 6, Section 2.2.3 of the Market Rules</td>
<td>Agree</td>
<td>Within 12 months</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Exemption of incineration plants from the automatic penalty scheme (APS)</td>
<td>Remove</td>
<td></td>
<td>The Panel resolved that since the APS has not been implemented and is hence not a feature of the market rules, the proposers should raise their concerns with the EMA separately.</td>
</tr>
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<tr>
<td>1</td>
<td>Transparency of transmission constraint and translation into dispatch arrangement</td>
<td>Agree</td>
<td>Within 12 months</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Publication of total offer capacity for Reserve and Regulation in the Dispatch Run (DPR)</td>
<td>Agree</td>
<td>Within 12 months</td>
<td>To tackle issues 17 and 18 jointly.</td>
</tr>
<tr>
<td>18</td>
<td>Publication of total offer capacity for Energy, Reserve and Regulation in the Look Ahead Run (LAR)</td>
<td>Agree</td>
<td>Within 12 months</td>
<td>To tackle issues 17 and 18 jointly.</td>
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<td>13</td>
<td>Block bidding for generation facilities</td>
<td>Agree</td>
<td>13-24 months</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Market operator to take reasonable action within reasonable time to rectify known errors in the Market Rules</td>
<td>Remove</td>
<td></td>
<td>EMC to ensure that correct process is in place to amend typo errors and to revert to the Panel on the process.</td>
</tr>
<tr>
<td>16</td>
<td>Eligibility of energy and reserve offers</td>
<td>Agree</td>
<td>13-24 months</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Enhancements to the Annual Review of Reserve Provider Groups (RPG) Process</td>
<td>Remove</td>
<td></td>
<td>The Panel agreed to remove this issue on the basis that it is being tackled in the System Operation Manual.</td>
</tr>
<tr>
<td>19</td>
<td>Publication of intertie status (interconnected or isolated)</td>
<td>Remove</td>
<td></td>
<td>The Panel agreed to remove this issue since the proposer and EMC’s representative are agreeable to take the discussion offline.</td>
</tr>
<tr>
<td>8</td>
<td>Review the Need for Detailed Design and Implementation of a Financial Transmission Rights (FTR) Regime</td>
<td>Remove</td>
<td></td>
<td>The Panel agreed to remove this issue, and noted that the industry could raise the proposal again if a need for transmission congestion management arises in the future.</td>
</tr>
<tr>
<td>14</td>
<td>Removal of Singapore Government Treasury bills as acceptable credit support</td>
<td>Agree</td>
<td>13-24 months</td>
<td></td>
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<tr>
<td>22</td>
<td>Market operator to proactively canvass market participants on data release requirements annually</td>
<td>Remove</td>
<td></td>
<td>The Panel agreed to remove this issue since an annual process to solicit for new work plan issues already exists.</td>
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Thus, the RCP, having considered the issues and EMC’s recommendations, agreed upon the updated work plan for 2012/13, as follows, and tasked EMC to monitor its progress.

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<td>10</td>
<td>Modeling of on-site ambient temperature into the MCE such that GTs/CCPs’ maximum capacity are adjusted dynamically</td>
<td>Agree</td>
<td>13-24 months</td>
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### Expected Commencement/Completion

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There being no other matters, the meeting ended at 12.30pm.

Dave E Carlson
Chairman

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