MINUTES OF THE RULES CHANGE PANEL
71st MEETING
HELD ON THURSDAY, 09 JANUARY 2014 AT 9.40AM
AT ENERGY MARKET CO. PTE LTD
238A THOMSON ROAD #11-01
NOVENA SQUARE, SINGAPORE 307684

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

Absent with apologies:  Loh Chin Seng  Dallon Kay

In Attendance:  Paul Poh  Tan Liang Ching
                (EMC)  Lucia Loh  Serena Ho
                Jo Ong

1.0 Notice of Meeting

The Chairman called the meeting to order at 9.40am. The Notice and Agenda of the meeting were taken as read.

2.0 Confirmation of Minutes of the 70th Rules Change Panel Meeting

The Minutes of the 70th Rules Change Panel meeting held on 7 November 2013 were tabled.

As there were no amendments to the Minutes, the Rules Change Panel approved the Minutes.

2.1 Matters Arising

Proposed Dynamic Updating of Standing Data

Mr. Paul Poh informed that the PSO’s view was that such data updates are infrequent and do not warrant automation of such data transfer. Some modelling and system changes can resolve pricing problems which is due to fictious busbars being designated as main/alternate default bus bars for generators. EMC has thus submitted this proposal for inclusion in the RCP Workplan prioritisation exercise.
3.0 EMC’s Proposed Budget for FY2014/15
(Paper No. EMC/RCP/71/2014/01)

(The Panel invited Ms. Tan Phaik Kim, CFO and Ms. Chan May Ling, Finance Manager of EMC to the meeting).

Mr. Dave Carlson, Chairman of the RCP, informed the Panel that Mr. Toh Seong Wah and him declared conflict of interests in the discussion on EMC’s Proposed Budget and Schedule of Fees and thus, would not take part directly in the discussion except to answer any questions directed at them. Mr. Kng Meng Hwee of the PSO also declared conflict of interests in the discussion.

Mr. Dave Carlson highlighted to the Panel that the Budget for FY2014/15 was similar to the budget published on EMC’s website for public consultation. The Panel was also informed that a disclaimer was included to ensure that EMC has taken reasonable care to provide accurate information in its budget.

Ms. Tan Phaik Kim, the Chief Financial Officer (“CFO”) presented the Budget for FY2014/2015.

The Panel was informed that under the Market Rules and EMC’s Market Licence, EMC was obliged to consult the Rules Change Panel on its Proposed Budget and Fees for the financial year 1 April 2014 to 31 March 2015, prior to submitting to the EMC Board for consideration and subsequently to the EMA for approval.

3.1 Revenue Regime

The Panel was informed that a Revenue Regulatory Regime for the 5 years from FY2013/14 to FY2017/18 has been determined by the Regulator on 13 March 2013. Unlike the previous regime of a revenue cap, the new regime adopts a price cap for each of the next 5 years. Under such a price cap regime, EMC will be allowed to charge a fixed $/MWh fee for electricity traded in the NEMS for each financial year, as follows:

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<th>Forecast</th>
<th>Projection</th>
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<tr>
<td>Price Cap Cents/MWh</td>
<td></td>
<td></td>
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<tr>
<td>(charged to both</td>
<td>FY13/14</td>
<td>FY14/15</td>
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<tr>
<td>‘buy’ and ‘sell’</td>
<td>28.48</td>
<td>27.57</td>
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<td>side of market)</td>
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<td>Forecast Volume MWh</td>
<td>44,005</td>
<td>48,114</td>
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<td></td>
<td>49,798</td>
<td>51,541</td>
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<td>53,345</td>
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3.1.1 Mr. Chan Hung Kwan queried if the price cap is subject to any adjustments over the next 5 years. EMC responded that the revenue is based on the agreed price cap multiplied by the electricity volume. Adjustments would be made to EMC’s admin fee in each year for exogenous items and depreciation. The savings from capital projects that were planned but did not materialize from depreciation would be returned to the market. For any additional work that is requested due to rule changes or EMA directives, EMC will seek approval from EMA to recover the additional costs through exogenous items in the admin fees.

3.1.1 Mr. Michael Wong queried whether the definition of ‘price cap’ could mean its maximum level implying that there may be possibilities to charge at a lower rate at the end. EMC responded that price cap refers to a fixed rate that is charged for the Admin Fee and it would not be changed whilst the volume can fluctuate.

3.2 Mr. Michael Wong queried if the budget contained revenue for other services rendered by EMC outside of NEMS. The CFO responded that the FY14/15 budget presented was only for the NEMS budget. Other unregulated revenues and expenditures will be covered separately from the NEMS budget and collected outside of the regular fees revenue. Mr. Sean Chan queried on how the Futures Market’s expenses and revenue will be accounted. Mr. Carlson responded that any revenues for Futures Market will be treated outside of NEMS and under unregulated revenues.

3.2.1 Mr. Wong queried whether Non-NEMS services are supported by the same EMC team or if there are any additional manpower costs and other related costs allocated. Mr. Carlson responded that given the slowing of NEMS revenue streams, EMC has to diversify to other revenue sources to share costs, and in the future he expects that some resources will be freed up from NEMS activities.

3.3 Mr. Wong also queried whether the savings of expenses of $6.6 million projected over the next five years relates to Non-NEMS activities, and requested for specific savings items. EMC confirmed the savings were not related to Non-NEMS, the savings is against the approved EMA regulatory budget. Due to the anticipated lower revenue, EMC has projected a lower cost base. Out of the $6.6 million savings, about $2 million had been incorporated into the FY14/15 budget.

3.3.1 In reply to Mr. Chan Hung Kwan’s query on the allowable WACC for price cap determination, the CFO said that the regulated WACC is 7.16%.

3.3.2 Mr. Phillip Tan asked if there are any adjustments for PIMS bonus.
The CFO responded that PIMS is not applicable from FY13/14 onwards.

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3.3.3 Mr. Phillip Tan noted the lower budget for salaries and employment benefits in FY14/15 and was concerned that EMC had under budgeted for salaries and employment benefits and may not retain/attract quality staff and this would affect quality of services. EMC explained that the lower budget arose from the replacement of some positions at lower levels and higher capitalization of salaries and employment benefits due to more capital projects.

3.3.4 Operating Expenses.

Mr. Tan queried the reason for the increase of panel fees from $235,000 to $280,000. EMC responded that the increase in panel fees were related to budgeted Market Surveillance Costs and if the costs are not utilized they will be refunded to market under exogenous costs.

3.3.5 Mr. Tan also queried the increase of $42,000 for internal audit fees. The CFO responded that its internal audit program covers a 3 year cycle and each year’s budget would depend on the areas of audit for that year. There was a one-time special audit of $120,000 performed in FY13/14.

3.3.6 Ms. Frances Chang noted there was a projected rental increase by 17% from FY15/16 and commented that the projected growth appears high. The CFO clarified that the increase was only after the next financial year and would thus not impact on the FY14/15 budget being tabled. Further, the projected increase was based on high-level assumptions for both rental and utilities. EMC has started early negotiation with the landlord on the rental.

3.3.7 Mr. Luke Peacocke noted that the chart on page 15 of the Business Strategic Plan showed a projected loss position for FY17/18. He commented that as a regulated service provider, EMC should not be placed in a position where its future financial position could jeopardize its high levels of service to the industry. This was not in the interest of the market. He asked the Panel to strategically monitor EMC’s profitability over the next 5 years.

3.3.8 Mr. Wong queried on the reason for the increase in capital budget for FY14/15 and FY15/16. EMC responded that the increase was mainly from the RCP and EMA directed project budget. The significant projects were mainly the Automatic Penalty System (APS), Demand Response (DR), Forward Sales Contract (FSC), Minimum Stable Load (MSL) and other RCP projects. It was clarified that the DR project will span 2 years, of which $2.3 million was the budget in respect of FY14/15 only.
3.4 The Rules Change Panel supported EMC’s Budget and Fees for FY2014/15 and will present its views to the EMC Board for consideration in finalising the Budget and Fees.

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3.5 EMC stated that it would circulate the RCP Report on EMC’s Budget and Schedule of Fees for FY2014/15 to the Panel for confirmation before issuing to the EMC Board and the EMA.

3.6 The Panel thanked Ms. Tan and Ms. Chan for their attendance and they both left the meeting.

4.0 Summary of Outstanding Rule Changes  
(Paper No. EMC/RCP/2014/71/04)

The Panel noted the summary of outstanding rules change proposals.

5.0 Monitoring List  
(Paper No. EMC/RCP/2014/71/05)

The Panel noted the contents of the paper.

6.0 Rules Change Workplan Status Update  
(Paper No. EMC/RCP/2014/71/06)

Mr. Paul Poh informed that all items on the work plan are in progress except for Item 4 on Multi-unit Facility Remodelling. EMC will be publishing a concept paper on the issue soon.

7.0 Modelling of Minimum Stable Load  
(Paper No. EMC/RCP/2014/71/320)

Ms. Lucia Loh informed that the Panel, at its 68th and 69th meetings, had in-principle supported the proposed modelling of generation registered facilities’ (GRFs’) minimum stable load (MSL), and agreed to concurrently implement the proposal with the EMA’s directive on the APS to reduce implementation costs to $203,000.

In addition to the implementation costs of $203,000, she informed the Panel that $6,300 more would be incurred to publish data on GRFs’ MSL level. Mr. Toh Seong Wah, at a later stage, added that the implementation should concurrently be “piggybacked” with the EMA directive on Automatic Penalty Scheme to significantly reduce costs.

Ms Loh also elaborated on the two revisions that are proposed to be made to the compensation framework that was previously presented:
i) To determine the applicable compensation quantum, EMC proposes to use a GRF’s StartGeneration level instead of whether it was scheduled for energy in the previous period.

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ii) In checking whether GRFs are constrained by their ramp rates, EMC proposes to remove the requirement to consider a GRF’s ramp up trajectory and to use a GRF’s ExpectedStartGeneration to better represent their beginning-of-period output.

She then presented the rule modifications to implement the proposal, incorporating the above revisions.

7.1 Mr. Michael Wong queried if the Technical Working Group (TWG) had been consulted on the proposed rule change given that it involves modifications to the market clearing formulation. He also asked Chairman for clarity on the circumstances under which issues should be referred to the TWG, and opined that this proposed rule change should be sent to the TWG.

7.1.1 Dr. Toh Mun Heng opined that if the issue is very technical then it should be sent to the TWG to verify the technical issues involved.

7.1.2 Mr. Poh said that issues are usually referred to the TWG when they involve changes to the market clearing formulation. He explained that this proposal was not referred to the TWG as it concerns more fundamentally the conceptual issues of i) whether GRFs’ energy schedule should explicitly take into account their MSL, and if so, ii) whether GRFs constrained out-of-merit should be compensated, which is something for the RCP to decide.

7.1.3 The Chairman added that the TWG was appointed by the RCP to support the RCP on technical issues. If there was a need to refer any issue to the TWG, the RCP should have made the reference at the concept paper stage.

7.1.4 Mr. Phillip Tan opined that, as a matter of principle, the rules change should not be sent to the TWG as the RCP has already make a decision on the issue in its previous meetings.

7.1.5 Mr. Kng Meng Hwee concurred with Mr Tan, adding that the modelling involved is not complex, and as such, there was no need to refer it to the TWG for deliberation.

7.2 The Chairman called for a vote on the rule modifications to model GRFs’ MSL, together with a compensation framework, in the proposed
The following Panel members voted to support the proposal:

- Mr. Luke Peacocke (Representative of Generation Licensee)
- Mr. Phillip Tan (Person experienced in Financial Matters)
- Mr. Kng Meng Hwee (Representative of the PSO)
- Mr. Toh Seong Wah (Representative of the EMC)

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- Mr. Sean Chan (Representative of Retail Electricity Licensee)
- Mr. Daniel Lee (Representative of Generation Licensee)
- Mr. Pak-Juan Koe (Representative of Generation Licensee)
- Mr. Chan Hung Kwan (Representative of Transmission Licensee)
- Ms. Frances Chang (Representative of consumers of electricity in Singapore)
- Dr. Toh Mun Heng (Representative of consumers of electricity in Singapore)

The following members abstained from voting:

- Mr. Lawrence Lee (Representative of Market Support Services Licensee)
- Mr. Michael Wong (Representative of Retail Electricity Licensee)

Thus, the Panel, by majority vote, **supported** the proposed modifications to the market rules and market manual to model GRFs’ minimum stable load.

8.0 **Provision of Regulation by Batteries**
(Paper No. EMC/RCP/2014/71/321)

Ms. Jo Ong presented the proposal to enable the provision of regulation by batteries.

Currently, only GRFs are eligible to provide regulation in the SWEM. Batteries are capable of adjusting their energy output (discharge rate) and consumption (charge rate) rapidly and accurately to complement GRFs in regulation provision. The proposed participation of batteries in the regulation market will be beneficial to the SWEM. The increase in quantity and quality of regulation providers is expected to enhance competition and result in higher market efficiency. The additional regulation provided by batteries will also be timely for improved system security with the upcoming entry of intermittent generation facilities. However, due to the limited storage capacities of batteries, they could fall out of the optimal SoC range when providing regulation. This is especially so when the deviations in grid frequency are large and the required regulation associated with either direction is high and for a prolonged period of time. The proposed dispatch mechanism of using high-pass AGC and base-point setting seek to ensure that batteries are
able to provide regulation continuously throughout a dispatch period despite their limited storage capacities.

Ms. Ong shared that the total time required will be 30 calendar-weeks and the total additional EMC cost required (on RCP budget) will be $146,800. Mr. Kng indicated that PSO would also have to incur cost and time to implement the proposal if approved.
8.1 Mr. Peacocke enquired whether the size of battery units is required to be at least 0.1MW to meet the minimum offer requirement of 0.1MW. Mr. Poh clarified that that is not the case since multiple batteries of less than 0.1MW in size can register as one facility.

Mr. Peacocke queried how battery facilities will pay for their energy consumption when they are charging. Mr. Poh responded that battery providers can choose to settle their load with a retailer, MSSL or directly with EMC. Mr. Peacocke further queried whether battery facilities will be paid for their energy output when they discharge. Mr. Poh replied that based on the current framework, they will not be paid but could potentially do so under the payment scheme for contestable consumers with small EGs which EMA is currently reviewing.

8.2 Mr. Kng shared that the while PSO is not against the participation of batteries in regulation provision, PSO is not yet comfortable with the dispatch mechanism which was based on inputs from Panasonic and had been looking for other feasible dispatch mechanisms. Mr. Kng reiterated that a concern was that the battery under certain operating conditions was withdrawing from the grid (i.e. charging) when the system frequency dips or vice versa. He recommended that the proposed rule change be referred to the TWG for deliberation.

The Chairman further agreed that it is necessary for the PSO to be given sufficient time to evaluate the testing data of Panasonic and provide feedback to the proposed rule changes.

Mr. Daniel Lee pointed out that the proposed rule changes, as drafted, were quite generic and does not prescribe the dispatch mechanism, which would be dealt with in the System Operations Manual (SOM). Mr. Peacocke agreed that the Panel should take into account the PSO’s views.

8.3 Ms. Chang enquired about the impact of the rule changes on consumers. The Chairman reaffirmed that greater competition in the regulation market is expected to put downward pressure on regulation prices in the future.

8.4 Mr. Koe queried if there are other prospective battery providers seeking to participate in the regulation market. The Chairman concurred that the proposed rules should not be tailored for a single provider.

8.5 The Chairman concluded that EMC will re-table the proposal for TWG and RCP after PSO is satisfied with the dispatch mechanism for batteries to provide regulation.
There being no other matters, the meeting ended at 12.15pm.

David E. Carlson
Chairman

Minutes taken by:
Eunice Koh
Sr. Executive, Corporate Secretariat