MINUTES OF THE RULES CHANGE PANEL
74th MEETING
HELD ON TUESDAY, 08 JULY 2014 AT 9.40AM
AT ENERGY MARKET CO. PTE LTD
238A THOMSON ROAD #11-01
NOVENA SQUARE, SINGAPORE 307684

Present:  Paul Poh (Chairman)  Michael Wong
           Chan Hung Kwan  Pak-Juan Koe
           Daniel Lee    Phillip Tan
           Dr. Toh Mun Heng  Sean Chan
           Frances Chang  Toh Seong Wah
           Lawrence Lee

Absent with apologies:  Dallon Kay  Loh Chin Seng
                        Kng Meng Hwee  Luke Peacocke

In Attendance:  Tan Liang Ching  Wang Jing
(EMC)          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 73rd RCP Meeting

The Minutes of the 73rd RCP meeting held on 06 May 2014 was tabled.

Mr. Daniel Lee requested EMC to correct a typographical error in Item 1.0 on Page 1, where the meeting was recorded to be called to order at “9.3am” when it should be “9.43am”.

Subject to the above amendment to the Minutes, the RCP approved the Minutes.

2.1 Matters Arising

2.1.1 Provision of Regulation by Batteries

Mr. Tan Liang Ching informed that the RCP requested for EMC to seek the RCP’s agreement to revisit the rule change proposal when the dispatch mechanism has been decided.

The PSO is now satisfied with the revised dispatch mechanism proposed by the battery provider. EMC recommends that the RCP task EMC to resume working on the issue and table the rule change proposal for TWG and RCP.
Mr. Sean Chan and Mr. Michael Wong enquired whether the earlier concern with the dispatch mechanism catering for only a single battery provider is addressed. Chairman explained that batteries are a new technology in regulation provision. Since the dispatch mechanism required for Singapore is unique, it will need to be acceptable to the PSO after being proposed and tested by a pioneer battery provider. Other prospective battery providers that enter the market subsequently may either use the dispatch mechanism acceptable to the PSO or propose other dispatch mechanisms that comply with PSO’s requirements.

The RCP agreed that EMC resume work on the issue and table the rule change proposal for TWG and RCP.

2.1.2 Removal of Item from Monitoring List

Mr. Tan informed that the item “Maximum Offer of Energy at Price Floor of -$4500/MWh” is removed from the Monitoring List.

3.0 Monitoring List

Under Item 1 – Number of Market Clearing Engine (MCE) Re-runs

Mr. Tan Liang Ching informed the RCP that from April to May 2014, there were 5 cases of price re-runs.

Mr. Michael Wong requested for clarification on the 15 May episode where the MCE failed to produce a real-time schedule. Mr. Toh Seong Wah clarified that the event coincided with the planned NEMS System maintenance that is conducted twice a year and expected to last an hour each, during which the PSO will dispatch generators using the short-term schedule instead. After the maintenance is completed, EMC will then conduct MCE re-runs to finalize prices.

Mr. Wong further queried on why the network status data used by the MCE did not accurately reflect the physical connections for the 27 May episode. Mr. Tan replied that EMC noticed price separation and abnormal line flows for the period during the price check process and verified ex-post with the PSO that the PSO was conducting commissioning tests. Chairman added that since the network status data used by the MCE is captured 10 minutes before the dispatch period, it does not reflect changes in the physical connections over the 10-minute period.

Mr. Wong expressed his concern that in the event that no anomalous prices are observed, cases of inaccurate network status data used by the MCE may remain undetected. Mr. Daniel Lee shared that in such cases, the inaccuracy of the network status data is likely to be immaterial. Mr. Wong opined that the verification of the network status data should not be driven by outcome i.e. prices. Rather, the PSO should pro-actively detect inaccuracies of the network status data in
reflecting physical connections.

The Panel requested PSO to clarify in the next RCP meeting the following:

- the reasons for the network status data not accurately reflecting the physical connections (as in the 27 May episode) and
- whether the PSO is able to proactively verify the network status data in future.

4.0 Rules Change Work Plan Status Update

Under Item 5 - Review of Compensation Mechanism under Section 3.11 of Chapter 3 of the Market Rules, Mr. Tan Liang Ching informed that the concept paper was published for consultation on 19 June 2014 and will be tabled at the next RCP meeting.

5.0 Summary of Outstanding Rule Changes

The RCP noted the summary of outstanding rule changes.

6.0 Introduction of Regulation Effectiveness Factor

(Paper No. EMC/RCP/74/2014/CP49)

Mr. Tan Liang Ching presented the proposal to introduce the Regulation Effectiveness Factor (REF), which measures the responsiveness of a given regulation provider and in turn translates into share of regulation payments. This ensures that these providers are provided with the correct incentives to be responsive to regulation signals.

Mr. Tan shared PJM's treatment of regulation providers in both performance assessment and subsequently regulation payments. As PJM's implementation is relatively comprehensive but resource intensive, EMC does not recommend a wholesale implementation of PJM's algorithm given the consideration to differentiate regulation providers without incurring significant costs. Instead, one possible enhancement could be to solely measure the Correlation scores of units during periods of actual response, which will then form its REF.

Chairman circulated the comments of Mr. Kng Meng Hwee (who was unable to attend the meeting) for the RCP's consideration. In his comments, Mr. Kng expressed support for introducing the proposed REF. He recognized that with the large amount of data points collected and processed, the Correlation score is a statistically robust reflection of GRFs responsiveness to regulation signals.

Mr. Michael Wong enquired why the PSO has changed its position from earlier having reservations over the proposal at the 50th RCP meeting in 2010, to supporting the proposal now. Mr. Tan responded that one possibility was that the proposal in 2010 had yet to study feasible methodologies implemented in other markets.
Dr. Toh Mun Heng queried on PJM’s market and its size compared to Singapore’s. Mr. Tan replied that PJM is a regional transmission organization (RTO) in the US that operates a wholesale electricity market across several states including Pennsylvania, New Jersey and Maryland. Hence, the PJM’s market is far larger than Singapore’s. Dr. Toh also queried that for the proposal, whether the same framework will be used to assess different types of regulation providers. Mr. Tan reiterated that all regulation providers, regardless of technology, will be assessed based on their historical Correlation scores to determine their regulation payments, similar to that for reserve provider groups.

In response to Mr. Pak-Juan Koe’s query on how frequently the reserve provider groupings are reviewed, Mr. Daniel Lee replied that it should be quarterly. Mr. Tan added that for consistency, the review of regulation provider groupings should be aligned with that for reserve providers.

Mr. Sean Chan enquired on the effectiveness of implementing solely the Correlation score in accurately differentiating regulation providers, as opposed to also including the Delay and Precision scores. Mr. Tan responded that to assess its effectiveness, simulations need to be conducted to compare if regulation providers, who perform well in only the Correlation score, perform similarly well in the overall Historical Performance score which incorporates Delay and Precision scores as well. However, Mr. Tan added that the benefit of using correlation is that it is a simple and easily understood measure.

With regards to Dr. Toh’s enquiry on whether the total regulation payments in a year are fixed, Mr. Tan shared that since the regulation payment is a function of price and quantity, regulation payments fluctuate based on the dynamic prices determined by the spot market. Chairman added that the PSO determines on an annual basis the regulation requirement for each half-hourly dispatch period, ranging from 50 to 130MW.

Mr. Koe expressed his concern on whether it is premature to exclude Delay and Precision scores, as seen viable in PJM, in determining the REF. Further studies should be conducted with the PSO on the effectiveness of incorporating all 3 scores in the REF. Mr. Sean Chan agreed that the proposed REF may not capture the totality of performance and entail the risk of overcompensating or inaccurately penalizing regulation providers who happen to fare well or badly in only the Correlation score.

The RCP, having considered the various concerns, tasked EMC to work with the PSO on (a) the implementation cost and time, and (b) the effectiveness, of implementing the REF based on

- Option A: Correlation score only;
• Option B: Correlation, Delay and Precision scores

The Panel will decide in the next RCP meeting whether to support the proposal to introduce the REF and if yes, to implement Option A or Option B.

(At 11.00am, Mr. Chan Hung Kwan extended his apologies for having to leave the meeting)

7.0 Reconciliation of the Demand Forecast
(Paper No. EMC/RCP/74/2014/CP52)

Ms. Serena Ho presented an assessment of the proposal for EMC to publish a comparison between PSO’s load forecasts (used in the preparation of forecast and dispatch schedules) and the actual metered load, showing the load values for each dispatch period and providing reasons for variance where applicable.

Ms. Ho explained the proposed revised methodology of comparing the most recent Very Short Term Load Forecast (VSTLF) for Period T (i.e. the forecast input to generate the real time schedule for Period T) with the actual gross generation recorded using SCADA, where both would represent the average value for Period T. The comparison can be made either monthly or quarterly, along with statistical information on the difference between the VSTLF and SCADA values. However, EMC will not have information on the reasons for variance and is unable to publish such explanation.

In Mr. Kng’s comments earlier circulated, he does not support the proposal because it would only add cost with no obvious benefit to the market. He opined that since the proposal was initiated in anticipation of the Demand Response (DR) scheme and Intermittent Generation Sources (IGS), it should be deferred till more details are available.

In response to Mr. Phillip Tan and Mr. Pak-Juan Koe’s queries on the motivation for the proposal, Ms. Ho shared that the proposer had indicated a desire to increase the industry’s ability to analyse and understand the accuracy of the demand forecast, and the reasons for load variations. Mr. Daniel Lee clarified that the proposal would be beneficial in instilling market confidence in the quality of the load forecast, especially with the upcoming changes such as DR and IGS which may affect the accuracy of the load forecast. He opined that with the proposed information published, systematic errors, if any, can be potentially discovered and corrected. This is important because persistent under- or over-forecasting may lead to speculation by gencos, potentially resulting in unoffered capacities when capacities are required. Therefore, the quality of the load forecast is important to not only the gencos, but also the system as a whole.

Mr. Michael Wong commented that since the PSO is responsible for the
load forecast, the PSO should already be measuring its variation from the actual generation to work on improving its accuracy. Mr. Koe further questioned why EMC is taking over the responsibility of analysing the accuracy of the load forecast from the PSO.

Mr. Lee noted that the market participants currently do not have information on the VSTLF or the SCADA value of actual gross generation, and hence are unable to do their own analyses on deviations between the two.

The Panel members present unanimously supported that (a) PSO provide EMC with the actual gross generation data recorded using SCADA, and (b) EMC publish (without conducting any analysis) both the VSTLF and the actual generation SCADA data received from the PSO in (a), for the MPs to perform their own analyses of the demand forecast. EMC was tasked to consult PSO on a suitable frequency that PSO will be comfortable with to provide EMC with the data in (a). EMC would also review the cost of publishing the VSTLF and the actual generation SCADA data.

The following RCP members unanimously supported (a) and (b) above:

- Mr. Toh Seong Wah (Representative of the EMC)
- Mr. Lawrence Lee (Representative of Market Support Services Licensee)
- Mr. Pak-Juan Koe (Representative of Generation Licensee)
- Mr. Daniel Lee (Representative of Retail Electricity Licensee)
- Mr. Michael Wong (Representative of Retail Electricity Licensee)
- Mr. Sean Chan (Representative of Retail Electricity Licensee)
- Ms. Frances Chang (Representative of consumers of electricity in Singapore)
- Dr. Toh Mun Heng (Representative of consumers of electricity in Singapore)
- Mr. Phillip Tan (Person experienced in Financial Matters)

There being no other matters, the meeting ended at 11.50am.

Paul Poh
Chairman

Minutes taken by:
Jo Ong
Economist, Market Administration