

**DETERMINATION OF THE MARKET SURVEILLANCE AND COMPLIANCE PANEL
MSCP/2010/D6**

Market Surveillance and Compliance Panel (“MSCP”)

Mr Thean Lip Ping, Chair
Professor Lim Chin
Mr Lee Keh Sai
Mr TPB Menon
Mr Philip Chua

Date of Determination

21 September 2010

Party

Energy Market Company

Subject

Failure to release and publish information on time for
a) the real-time dispatch schedule for period 15 on 16 May 2010; and
b) the real-time dispatch schedule for period 31 on 17 May 2010

Applicable Rule(s) in the Singapore Electricity Market Rules

1. Section 9.2.1 of Chapter 6

“The EMC shall, prior to the commencement of each dispatch period and in accordance with the market operations timetable, use the market clearing engine to determine for that dispatch period:

9.2.1.1 a real-time dispatch schedule, containing schedules of energy, reserve and regulation for registered facilities, to be released to the PSO, which in accordance with Section 9.1.2 of Chapter 5 shall be deemed to constitute the dispatch instructions issued by the PSO to the applicable dispatch coordinators unless and until further dispatch instructions are issued by the PSO to a given dispatch coordinator pursuant to section 9.1.3 of Chapter 5; and

9.2.1.2 a real-time pricing schedule determined by the market clearing engine... including:

- a. energy prices for each network node;
- b. the uniform Singapore electricity price;
- c. reserve prices for each reserve class and for each reserve provider group;
and
- d. regulation prices.”

The market operations timetable in Appendix 6A of Chapter 6 provides for the EMC to release the real-time dispatch schedule to the PSO prior to 30 seconds before the beginning of the dispatch period.

2. Section 9.2.3 of Chapter 6

"The EMC shall, in accordance with the market operations timetable, release to the dispatch coordinator for each registered facility a real-time dispatch schedule comprising that portion of the real-time dispatch schedule referred to in section 9.2.1.1 that describes the quantities of energy, reserve by reserve class and regulation scheduled in respect of that registered facility."

3. Section 9.2.4 of Chapter 6

"The EMC shall, in accordance with the market operations timetable, publish the following information as it pertains to each dispatch period:

- 9.2.4.1 total load;
- 9.2.4.2 total transmission losses;
- 9.2.4.3 total reserve requirements by reserve class;
- 9.2.4.4 total regulation requirements;
- 9.2.4.5 energy prices associated with each market network node at which a generation registered facility or generation settlement facility is located, determined in accordance with sections D.24.1 and D.24.5 of Appendix 6D;
- 9.2.4.6 the uniform Singapore energy price, determined in accordance with section D.24.6 of Appendix 6D;
- 9.2.4.7 reserve prices for each reserve class and reserve provider group, determined in accordance with sections D.24.3, D.24.5 and D.24.7 of Appendix 6D;
- 9.2.4.8 regulation prices, determined in accordance with sections D.24.4 and D.24.5 of Appendix 6D;
- 9.2.4.9 any system energy shortfalls reported by the market clearing engine;
- 9.2.4.10 any system reserve shortfalls, by reserve class, reported by the market clearing engine;
- 9.2.4.11 any system regulation shortfalls reported by the market clearing engine; and
- 9.2.4.12 a list of security constraints and generation fixing constraints applied."

The market operations timetable in Appendix 6A of Chapter 6 provides for the EMC to publish the real-time dispatch schedule prior to 30 seconds before the beginning of the dispatch period.

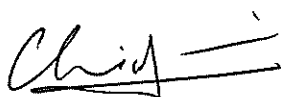
Facts and Circumstances

- 4. Energy Market Company ("EMC") submitted a self-report on 4 June 2010 that EMC had failed to release on time to the Power System Operator ("PSO") the real-time dispatch schedule for period 15 on 16 May 2010 and period 31 on 17 May 2010 within the deadlines required under the market rules. The real-time dispatch schedules of the two periods were also published late on the Trading Website.
- 5. EMC said that, based on its investigation, on 15 May 2010 (Saturday) at 6:30 pm, a pair of shared memory caches had failed in the NEMS storage system. The NEMS storage system immediately alerted EMC's principal vendor who then in turn alerted the current local support team for the NEMS storage system. The local support team claimed to have forwarded the failure notice to the EMC support team, but the notice had failed to reach EMC on 15 May 2010 due to a problem with its email systems.

6. According to EMC, it noticed that on 16 May 2010 (Sunday), one of the EMC extensive Input/Output (I/O) activities job took longer than normal to complete and overlapped the real-time dispatch schedule window. The overlap, in conjunction with the undiscovered problem of the faulty shared memory caches in the NEMS storage system, led to the delayed processing of the real-time dispatch run for period 15. This, in turn, led to the real-time dispatch schedule being sent late to PSO and published late on the Trading Website. The internal NEMS monitoring system notified the on-call engineer of the delay in the dispatch schedule on the same day. EMC said that they performed a thorough investigation on all the overlapping processes and migrated some of the scheduled queries from the Operation database to the data warehouse to reduce the load to the system.
7. On 17 May 2010 (Monday), the local support team informed EMC support team by telephone about the Saturday's default. EMC planned for an urgent outage of the NEMS Storage system to be held on the same day between 4 pm to 6 pm to replace the faulty memory caches. However, before the replacement could take place, another extensive I/O activity occurred, which resulted in another similar delayed processing of the real-time dispatch schedule for period 31 at 2:55 pm. Consequently, the real-time dispatch schedule was sent late to PSO and published late on the Trading website.

Determination

8. On 12 August 2010, the MSCP sent a letter to EMC informing EMC that it was of the view that EMC was prima facie in breach of the market rules for the incidents on 16 and 17 May 2010 and invited EMC to make written representations for the alleged breach.
9. On 17 August 2010, EMC replied that it did not wish to make written representations. However EMC said that to prevent a recurrence of such potential rule breach, EMC had in July 2010 awarded a contract to replace its aging hardware. The contract is in the implementation phase and is expected to complete by end October 2010. With the placement of new Storage hardware, EMC said that it would strive to keep the storage available for the critical NEMS operation. Meanwhile, EMC said it would continue to monitor the existing aging hardware until its replacement.
10. EMC has also implemented a new escalation procedure for the notification of failures of the NEMS. Its vendor's call centre will escalate any failure notification to a common group email address comprising both the local support team and EMC support team members. Moreover, its vendor's call centre will also call EMC's 24x7 Helpdesk to inform about any failure. EMC Helpdesk will ensure that EMC's on-call engineer is activated immediately to take corrective actions and to escalate the matter to the relevant engineers.
11. The MSCP determined on the basis of the facts referred to above that EMC breached sections 9.2.1, 9.2.3 and 9.2.4 of Chapter 6 of the market rules.
12. However, the breach was self-reported, inadvertent, rectified quickly and did not have a significant impact on the wholesale electricity market.
13. Therefore the MSCP determined that the appropriate action to be taken was to issue a letter of non-compliance to EMC and award cost of \$1,300 against EMC.



Lim Chin
For Chair, Market Surveillance and Compliance Panel