

**DETERMINATION OF THE MARKET SURVEILLANCE AND COMPLIANCE PANEL
MSCP/2015/D1**

Market Surveillance and Compliance Panel (“MSCP”)

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

Date of Determination

12 August 2015

Party

Energy Market Company Pte Ltd (“EMC”)

Subject

Failure of Energy Market Company to release and publish real-time schedules, short-term schedules and pre-dispatch schedules on 16 January 2015

FACTS AND CIRCUMSTANCES

1. Energy Market Company Pte Ltd (“EMC”) submitted a self-report on 1 April 2015 that it did not release and publish the following schedules on 16 January 2015, as required under the Singapore Electricity Market Rules (“market rules”):
 - a. real-time schedules (“RTS”) for periods 21 to 28;
 - b. short-term schedules (“STS”) for periods 22 to 29; and
 - c. pre-dispatch schedules (“PDS”) for periods 25 and 29.
2. On 16 January 2015, all the respective real time, short-term and pre-dispatch schedules were determined according to the market rules. However, the schedules were not released to the market and published due to a network disruption caused by a faulty hardware module (Module-5) in the primary network core switch at EMC’s Ayer Rajah (“AY”) data centre.
3. The network core switches interlink the network traffic to and from AY data centre. At the AY data centre, there is a pair of network core switches – the primary and the redundant network core switches. Under normal operation, two-way traffic flows between AY data centre and the users through the primary network core switch and the active firewall (normal network path). If the primary network core switch fails, traffic flow will be diverted through the redundant network core switch and the standby firewall (redundant network path).

4. During the incident on 16 January 2015, the fault of Module-5 in the primary network core switch was intermittent. This resulted in the flipping of traffic between normal network path and redundant network path; thus disrupting the network connectivity between the AY data centre and the users. If the fault at the primary network core switch was definite, the redundant network core switch and the standby firewall could have taken over the operation to provide connectivity with the users.
5. Owing to the disruption of the network connectivity between AY data centre and the external network, the respective schedules were not released to the market participants and the PSO and were not published. The PSO dispatched the generating units for the affected periods based on the latest available STS file. EMC conducted a re-run for the affected RTS file for 16 January 2015 periods 21 to 28.
6. On 2 June 2015, the MSCP wrote to inform EMC that it considered EMC was prima facie in breach of sections 7.7.2, 7.7.2A, 9.2.3 and 9.2.4 of Chapter 6 of the market rules and invited EMC to make written representations.
7. EMC replied on 15 June 2015 that it had nothing further to add in relation to the matter.
8. As to follow-up actions, EMC had, together with the network vendors, installed additional hardware modules for the first two network core switches which provides further resiliency at the module level. This was completed on 30 January 2015. EMC also engaged an independent network expert to perform a review of the overall network design and configuration. This was completed in June 2015 and the consultant has recommended some areas of improvements for EMC.

APPLICABLE MARKET RULES

Release and publication of RTS

9. Section 9.2.3 of Chapter 6 of the market rules states:

“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.”

Explanatory Note: Participants will be sent the specific schedule quantities that pertain to them under section 9.2.3 and will be provided with the associated prices under section 9.2.4.

10. Section 9.2.4 of Chapter 6 of the market rules states:

“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.”

Release and publication of STS

11. Section 7.7.2A of Chapter 6 of the market rules states:

“Not later than 25 minutes prior to the commencement of the first dispatch period of the short-term schedule referred to in section 7.4A, the EMC shall, for each dispatch period included in the short-term schedule:

- 7.7.2A.1 release to the dispatch coordinator for each registered facility the projected schedules for energy, regulation and reserve, by reserve class, for that registered facility;
- 7.7.2A.2 publish the information described in section 7.7.3; and
- 7.7.2A.3 communicate to the PSO the projected schedules for energy, regulation and reserve, by reserve class, for each registered facility, together with the information described in section 7.7.3, in accordance with the system operation manual and any applicable market manual.”

Release and publication of PDS

12. Section 7.7.2 of Chapter 6 of the market rules states:

“Not later than 15 minutes prior to the commencement of the first dispatch period of each of the three pre-dispatch schedule scenarios referred to in section 7.4.1, the EMC shall, for each dispatch period included in each of those three pre-dispatch schedule scenarios:

- 7.7.2.1 release to the dispatch coordinator for each registered facility the projected schedules for energy, regulation and reserve, by reserve class, for that registered facility;
- 7.7.2.2 publish the information described in section 7.7.3; and
- 7.7.2.3 communicate to the PSO the projected schedules for energy, regulation and reserve, by reserve class, for each registered facility, together with the information described in section 7.7.3, in accordance with the system operation manual and any applicable market manual.”

Publication of information

13. Section 7.7.3 of Chapter 6 of the market rules states:

“In accordance with sections 7.7.1, 7.7.2 and 7.7.2A, the EMC shall publish the following information for each dispatch period and for each market outlook scenario, pre-dispatch schedule scenario and short-term schedule:

- 7.7.3.1 the projected total load;
- 7.7.3.2 the projected total transmission losses;
- 7.7.3.3 total reserve requirements by reserve class;
- 7.7.3.4 total regulation requirements;
- 7.7.3.5 projected 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;
- 7.7.3.6 the projected uniform Singapore energy price, determined in accordance with section D.24.6 of Appendix 6D;
- 7.7.3.7 projected 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;
- 7.7.3.8 projected regulation prices, determined in accordance with sections D.24.4 and D.24.5 of Appendix 6D;
- 7.7.3.9 any predicted system energy shortfalls;
- 7.7.3.10 any predicted system reserve shortfalls, by reserve class;
- 7.7.3.11 any predicted system regulation shortfalls; and
- 7.7.3.12 a list of security constraints and generation fixing constraints applied.”

ENFORCEMENT

- 14. The MSCP determined on the basis of the facts referred to above that EMC breached sections 7.7.2, 7.7.2A, 9.2.3 and 9.2.4 of Chapter 6 of the market rules.
- 15. This incident was self-reported and had negligible impact on the wholesale electricity market.
- 16. The MSCP hereby issues a letter of non-compliance to EMC and directs EMC to pay costs, fixed at \$1,500.



Thean Lip Ping
Chair
Market Surveillance and Compliance Panel