I hope everyone had a wonderful Lunar New Year celebration and a great start to the year of the horse.

After wrapping up the year at $147/MWh in December 2013, the Uniform Singapore Energy Price (USEP) continued to trade below $150/MWh on a monthly average basis in the new year. Generation supply remained strong in the first two months of 2014, with the monthly average combined-cycle gas turbine supply crossing the 7,000MW mark for the first time since the market started. More details of the wholesale electricity market’s performance can be found on page 3.

In February, the Energy Market Authority approved a rule change which will enable generators to opt for their minimum stable loads (MSL) to be modelled by the market clearing engine. This will prevent a generator from being scheduled for energy at a level below its MSL, and not being able to comply with its dispatch schedule as a result. This rule change is detailed on page 2.

EMC successfully completed ‘Exercise Thunderbolt’ in February. This is one of the business continuity preparedness (BCP) exercises that we conduct each year to ensure that the wholesale electricity market can continue to operate during an emergency. An overview of our annual BCP work plan can be found on page 2.

In 2013, EMC continued to support the renovation and refurbishment work at Movement for the Intellectually Disabled of Singapore (MINDS) in Ang Mo Kio (AMK). With EMC’s assistance, the centre was able to make further improvements to its facilities for its clients’ safety and therapy. My EMC colleagues joined the centre in its annual Chinese New Year celebration earlier this year, marking the tenth year of friendship and collaboration between the two organisations. Read more about the celebration below.

As we approach the end of the first quarter of 2014, I am pleased to update that the NEMS Market Report and Market Surveillance and Compliance Panel Annual Report 2013 are near completion, and printed copies will be available from mid-April.

2014 promises to be an exciting year and I look forward to working with all of you to meet the challenges ahead.

Dave Carlson
Chief Executive Officer

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**Welcoming the Year of the Horse with MINDS Ang Mo Kio**

EMC volunteers welcomed the year of the horse with the Movement for the Intellectually Disabled of Singapore (MINDS) in Ang Mo Kio (AMK) on 12 February.

EMC has been supporting MINDS AMK for the past ten years. In 2013, we continued to focus our efforts on improving the day-care facilities of the centre. EMC sponsored additional closed-circuit televisions at blind spots in the centre to facilitate the observation of clients. We also sponsored renovation works that improved safety for older clients, for example, the fitting of ramps and shower seats in bathrooms, levelling of kerbs as well as laying of anti-slip tiling.

The Chinese New Year celebration was a combined effort by the centre’s clients, teachers and volunteers. Performances included song and dance, a short drama on the origin of the 12 Chinese zodiac signs, and a lion dance by the clients from SIA MINDS.

The celebration ended with lunch for all at McDonald’s.

EMC volunteers thoroughly enjoyed the performances and the opportunity to engage with the clients and staff of MINDS AMK. We look forward to future activities with them.
Exercise Thunderbolt

EMC conducted our annual business continuity preparedness (BCP) exercise, ‘Exercise Thunderbolt’, on 27 February. The purpose of this exercise is to evaluate EMC’s preparedness in the event that operations at the Novena Square office are rendered impossible.

This year, ‘Exercise Thunderbolt’ covered only staff evacuation from the office, as well as movement to and from a pre-identified assembly area. Unlike previous years, system switchover to our backup site was not included so as to limit disruptions to the market, and will be tested in other exercises in the later part of the year.

With the successful completion of ‘Exercise Thunderbolt’ in February, EMC has completed the BCP work plan for the financial year 2013/2014 as detailed below:

<table>
<thead>
<tr>
<th>Type of BCP Test</th>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Disaster Recovery Test</td>
<td>May 2013</td>
<td>NEMS system switched over to backup site.</td>
</tr>
<tr>
<td></td>
<td>November 2013</td>
<td></td>
</tr>
<tr>
<td>Desktop Scenario Test</td>
<td>June 2013</td>
<td>Management team and identified personnel worked on injects to ensure familiarity with emergency crisis and business continuity procedures.</td>
</tr>
<tr>
<td>Home Quarantine Order</td>
<td>July 2013</td>
<td>Critical teams carried out daily operations from home.</td>
</tr>
<tr>
<td>BCP Site Readiness Test</td>
<td>August 2013</td>
<td>Critical teams worked from alternate office site. IT LAN system switched over to NEMS Data Centre.</td>
</tr>
<tr>
<td>Exercise Epsilon</td>
<td>September 2013</td>
<td>All staff activated by phone. Management team and identified personnel reported back to office within pre-specified timeframe.</td>
</tr>
<tr>
<td>Exercise Jaguar</td>
<td>October 2013</td>
<td>Industry-wide BCP exercise.</td>
</tr>
<tr>
<td>Exercise Thunderbolt</td>
<td>February 2014</td>
<td>All staff evacuated from office to simulate emergency situation.</td>
</tr>
</tbody>
</table>

Rule Change Updates - Modelling of Minimum Stable Load

Currently, the market clearing engine can schedule generators for energy at any output level up to the offer quantities that are achievable by their ramp rates, without considering the generators’ minimum stable loads (MSL).

Base-load generators can work around this limitation by offering their MSL quantities at low or negative prices to increase the likelihood of being dispatched at or above their MSLs, as the market clearing prices can cover their cost.

Peaking generators (which are meant to serve only the few hours of peak demand a year), however, cannot adopt the same strategy because they need to offer high prices to recover their cost. Thus, a peaking generator tends to be the marginal unit when scheduled. This could result in its offer being partially cleared at a level below its MSL and, therefore, making it unable to comply with its dispatch schedule.

To overcome this, a proposal received suggests that generators be allowed to opt for their MSLs to be modelled, which would mean that the generators can either be scheduled for energy at or above their MSLs, or not be scheduled at all.

With such modelling, there could be times when a generator is scheduled at its MSL but clearing prices are lower than that offered. In such situations, compensation is proposed to ensure that such generators receive at least their offer prices, which proxy their cost.

At its meeting in January, the Rules Change Panel supported this proposal. It will come into effect in August 2015, as its implementation will be aligned with other system changes taking effect in the market at that time.
Market Update

The combined-cycle gas turbine (CCGT\textsuperscript{1}) supply surged at the start of 2014. January’s monthly average CCGT supply exceeded 7,000MW and provided a strong boost to overall supply. This is the first time since the market started that the monthly CCGT supply has crossed the 7,000MW mark. Forecasted demand, on the other hand, rose at a much slower pace. The wide gap between total supply and forecasted demand resulted in a strong supply cushion\textsuperscript{2} of more than 30 percent in early 2014.

The CCGT market share has been increasing over the years. It crossed the 90 percent mark in late 2012, and remained above this threshold every month in 2013. In the first two months of 2014, it surged further and rose above 97 percent.

The Balance Vesting Price (BVP)* and LNG Vesting Price (LVP)* are revised quarterly. The Uniform Singapore Energy Price (USEP) has been clearing below these two vesting prices since August 2013 largely due to the strong CCGT supply. This trend continued in the first two months of 2014. The BVP and LVP for the first quarter of the year are $190.09/MWh and $197.30/MWh respectively, while the monthly USEP for January and February were $139/MWh and $143/MWh respectively. These are among the lowest levels seen for the monthly average USEP since January 2013.

\textsuperscript{1} CCGT refers to combined-cycle gas turbine/cogeneration/trigeneration (combined category).
\textsuperscript{2} Supply cushion measures the percentage of total supply available after matching off demand.

* Balance Vesting Price (BVP) is the price for the Balance Vesting Quantity allocated whilst LNG Vesting Price (LVP) is the price for the LNG Vesting Quantity allocated.

Send us Comments, Feedback or Questions

The EMC Bulletin is written by EMC for you and we are always striving to improve our service. We are interested in any feedback you might have about specific articles and topics covered or comments and suggestions about other areas you would like to see included.

Please send your comments, feedback or any questions either via e-mail to info@emcsg.com or via fax to +65 6779 3030.

Thank you in advance for your time and effort.
User Forum

Market Information Sharing Forum (MISF)
The 73rd session of the MISF was held on 16 January.

Bai Jie, Senior Market Analyst from EMC’s Market Operations team, presented the highlights of the National Electricity Market of Singapore’s (NEMS) performance in 2013 as well as an update on the upcoming system enhancements and projects. Tan Choon Kiat, Assistant Manager from the Market Operations team, briefed the industry on a meter incident that occurred on 24 and 25 December 2013, and facilitated discussions pertaining to changes in the recovery of EMC’s admin fees.

Mr Tan also presented at the MISF held on 13 March. More details on his presentation will be covered in the next issue of the bulletin.

Market Systems User Group (MSUG)
The bi-monthly MSUG forum was held on 20 February. EMC IT updated the attendees on the following topics:

- IT incidents that occurred in December 2013 and January 2014, and actions taken to resolve them;
- Status updates on key on-going IT Infrastructure and Application projects:
  - Network Upgrade Project (NUP);
  - Tender Vesting Contract; and
  - Sunset plan for MP-API (Market Participant-Application Programming Interface) in September 2014.

On the NUP, the upgrade of the internet lease line to Internet Protocol version 6 (IPv6) was successfully completed on 22 January.

In addition to the above, EMC IT held its fourth knowledge sharing session at the forum, providing the attendees with insights into the Shareplex and Oracle database tools in the Business Continuity Architecture.

The next MSUG forum is tentatively scheduled for Thursday, 17 April.

EMC Training Programme – Next Course on 15 and 16 May 2014

EMC will be holding the next run of its two-day training course, Understanding Electricity Markets, on 15 and 16 May 2014. Our staff will be conducting six sessions covering the following topics:

- Understanding Electricity
- Why Reform and Regulation is Essential in the Electricity Industry
- The National Electricity Market of Singapore and its Unique Features
- Pricing Mechanism and Economic Dispatch
- Settlement
- How Consumers can Influence Electricity Markets

The course dates for 2014 are as follows:

- 15 – 16 May
- 14 – 15 August
- 13 – 14 November

We advise you to book early to secure your place in the course dates of your choice and benefit from our early-bird discount.

Further details on the programme and on how to register are on our website, www.emcsg.com. For enquiries, please e-mail trainingprogramme@emcsg.com or contact Jan Lee at +65 6779 3000.